

**THE ROLE OF COLLECTIVE MOBILIZATION IN
THE DIVERGENCE OF THE RURAL ECONOMIES OF
CHINA AND INDIA (1950-1990)**

by

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A dissertation submitted to Johns Hopkins University in conformity with the
requirements for the degree of Doctor of Philosophy

Baltimore, Maryland

February, 2015

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ABSTRACT

The economic divergence of China and India in the post-1950 era has appeared as one of the most intriguing puzzles of comparative and historical social sciences in recent decades. In 1950, although both countries were very poor, China was much poorer, with a per capita GDP 38% less than that of India. This situation changed completely in the decades following Indian independence (1947) and the Chinese Revolution (1949). China's economy caught up with India's in 1978 and greatly surpassed it later on, making its per capita GDP 30% higher than India's in 1990. The differential performance of their rural economies contributed significantly to this outcome.

This study argues that this outcome was closely related to two countries' differential performance in the development of physical infrastructure and human capital in the countryside. In China, the radical land reform of 1947-52 and the rural collectivization after 1952 eliminated the power of the rural elite, flattened the political economic terrain, and enabled the state to establish the rural collectives. By mobilizing unpaid labor and financial resources of the villagers through the mediation of the rural collectives, the Chinese state developed rural infrastructure, technology, and human capital at a pace and geographical scope that was far beyond its limited fiscal capacity. Rural collectives also enabled the state to tax the increasing agricultural surplus and utilize it for agricultural modernization and rural industrialization. I argue that efforts by the Indian state to establish rural organizations with similar mobilization capabilities failed due to the effective opposition of well-entrenched political and economic interests in the countryside. Unable to mobilize the unpaid labor and financial resources of the rural population, the Indian government relied primarily on its limited fiscal resources, which produced a much

slower and geographically narrower development of physical infrastructure and human capital. It also failed to tax the agricultural surplus effectively, which constrained agricultural modernization and rural industrialization. As a result, China's agriculture and rural economy developed much more rapidly than India's, which contributed significantly to the divergence of their economies in the post-1950 era.

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ACKNOWLEDGEMENTS

This dissertation would not be completed without the strong support provided by a large number of people.

My deepest thanks go to my advisor, Joel Andreas. Taking his courses, reading his works, and exchanging ideas with him made a strong influence on my intellectual trajectory. He was one of the few people who wholeheartedly supported my decision to learn the Chinese language, stay in China for a long time, and concentrate on China's rural economy in my dissertation. From the time of writing my proposal to the completion of my dissertation, Joel provided me the greatest support. He patiently read different versions of each chapter and provided very detailed critiques and suggestions in order to make my dissertation stronger. I consider myself very lucky for working with him. During this process I learned from Joel how to be a good advisor.

Other members of my dissertation committee also made significant contributions to the progress of my study. I thank Michael Levien for his detailed critiques and suggestions on several chapters (especially the ones on India), which helped me to develop my arguments further. Ho-fung Hung's critical feedback on my dissertation proposal helped me avoid several potential problems at the onset of the research process. His comments on a later version of the dissertation were helpful. I am also thankful to William Rowe. Attending his seminar on the modern Chinese history was a valuable experience, which increased my intellectual interest on China and helped me realize that understanding the experience of the People's Republic of China requires a deeper knowledge of the imperial and Republican periods. This realization encouraged me to make a detailed

inquiry on the pre-revolutionary China's rural economy, whose results are presented in Appendix A of this dissertation. I also thank Bill for the critical comments that he provided on my paper presented in the East Asian Studies Student Symposium at Johns Hopkins University on 11 April 2014. Finally, I thank him for his detailed feedback on Appendix A. I would also like to thank Erin Chung for providing a lively intellectual atmosphere to me and other participants of her writing seminar at JHU in Fall 2014, giving detailed comments on Chapter 1 and a later version of the dissertation. I also thank Rina Agarwala, a former member of my dissertation committee, for her constructive criticism of my proposal, which helped me clarify my arguments further.

Two distinguished scholars at JHU deserve special thanks. Giovanni Arrighi's presence was the most important reason of my desire to come to Johns Hopkins for my PhD. He was one of the best intellectuals of the 20th and 21st centuries. I consider myself very lucky for attending Giovanni's graduate seminars, which broadened my intellectual horizon widely. His death in 2009 was a great loss for all people who know him well. I will miss him greatly. Like all students working on political economy and comparative and historical sociology in the Department of Sociology at JHU, Beverly Silver has been a strong intellectual mentor for me. I learned a great deal from her seminars on labor and comparative and historical research methods. She has made a strong contribution to the maintenance of a lively intellectual atmosphere in our department, from which I have benefited greatly since the beginning of my PhD in 2007.

Many Chinese and Indian academics and intellectuals provided me crucial assistance during the research process. I would like to thank He Xuefeng, He Huili, Li Derui, Lao Tian, Lin Huihuang, Liu Rui, Gong Weigang, and Yang Yunyun very much for

patiently answering my questions in several long conversations, which helped me understand rural China better. On the India side of my research, I am thankful to many scholars including Vinoj Abraham, Paul Appasamy, Palani Aragasamy, Pulapre Balakrishnan, Praveen Jha, K.P. Kannan, Srikanth Kondapalli, Sanjeev Kumar, Sriram Natrajan, G. Palanhithurai, S. Ramaswamy, Maria Saleth, K. Sivasubramaniyan, Samy Subramanian, Selvam Velangani Manickam, M. Vijayavaskar, Jesim Pais, Thanjai Ramamurthy, and Sanjay Verma.

Han Dongping and Manjusha Nair provided encouraging comments on my dissertation proposal. I thank Ali Rıza Güngen, Ümit Akçay, Li Yao, Li Derui, Hirofumi Kawaguchi, Karyn Wang, Zhang Chunman, Sansar Tsakhirmaa, and Stephan Lee for their feedback on Chapter 1. Ceren Ergenç provided useful and encouraging comments on Chapter 2. Erdem Yörük shared with me detailed comments on several chapters. I thank Smriti Upadhyay for her suggestions on Appendix B.

I have been very lucky for being surrounded by many friends whose support helped me endure all difficulties involved in doing PhD for long years. Erdem Yörük's friendship and intellectual support during the entire process have been invaluable and unforgettable. I thank Savaş Şahan Karataşlı, Şefika Kumral, Emek Karaca, Gizem Koşar, Genco Güralp, Adem Can, Bican Polat, Sezer Yaşar, Onat Yılmaz, Sevcan Yeşiltaş, "the other" Erdem Yörük, Li Yao, Huang Lingli, Zhan Shaohua, Dong Yige, Sika Koudou, Smriti Upadhyay, Yu Xiao, Ryan Nielsen, Nazish Zafar, Daniel Pasciuti, Michael Rees, and Zhang Lu for their friendship and support. Jiang Shi's friendship made my life in Wuhan unforgettable. Arangasamy Kanakaraj's generous support made my India trip go very well. My dear old

friends, Hilal Çelikkaya, Emin Gencer Aydın, and Saygın Doğancık have continuously supported me during these years.

I also thank the staff of the Department of Sociology at JHU (Linda Burkhardt, Jessie Albee, and Terri Lovern) very much for their assistance since the beginning of my PhD.

Finally, I would like to express my deepest gratitude to my mother, Emine Gülseren Gürel and my sister, Ayşe Gürel for their strong support at all crucial stages of my life, including this dissertation.

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I. EXPLAINING RURAL DEVELOPMENT IN CHINA AND INDIA

The economic divergence of China and India in the post-1950 era has appeared as one of the most intriguing puzzles of comparative and historical social sciences in recent decades. Since 1950 two countries have comprised about one third of the total population and about half of the total rural population of the world. They were among the poorest countries in 1950. However, India's per capita GDP had been consistently above China's since 1870. The former was 38% higher than the latter in 1950. In short, although both countries were poor, China was much poorer than India. This situation changed completely in the decades following Indian independence (1947) and the Chinese Revolution (1949). The gap was bridged for the first time in 1978 when China's per capita GDP surpassed India's by 1.23%. The gap continued to increase in the next two decades. China's per capita GDP was 30% higher than India's in 1990. It was 1.81 times and 2.38 times of India's in 2000 and 2010, respectively (Table 1).¹

Table 1. GDP Per Capita in China and India, 1870-2010 (1990 Geary-Khamis International Dollar)

Year	China	India
1870	530	533
1890	540	584
1900	545	599
1930	568	726
1950	448	619
1960	662	753
1970	778	868
1978	978	966
1979	1039	895
1980	1061	938
1990	1871	1309
2000	3421	1882

¹ According to the IMF and United Nations data, the gap between the growth rates of GDP per capita of the two countries was greater than the estimates of the Maddison Project Database shown on Table 1.1 (Nayyar, 2008, p. 4; Popov, 2014, pp. 79-81).

This study aims to identify the reasons behind the differential performance of the rural economies of China and India between 1950 and 1990. The rural population comprised more than three-quarters of the total population in both countries until 1980. In 1990, about half of China's population and three-quarters of India's population were living in the countryside. Agriculture contributed more than half of their national income in 1950 and slightly less than one-third of it in 1990 (GOI, Ministry of Finance, 2000, p. s-114; Panigrahy, 2006, p. 43; Sivasubramonian, 2000, pp. 639-644; Zhonghua Renmin Gongheguo Tongji Ju, 1983, p. 15; Zhonghua Renmin Gongheguo Tongji Ju, 1990, p. 89; Zhonghua Renmin Gongheguo Tongji Ju, 1992, p. 4). In short, although the non-agricultural economy gained greater significance over time, neither of the countries had the chance to achieve decent rates of economic growth without a well-performing agriculture. Chinese agriculture developed faster than its Indian counterpart during much of the post-1950 era (with the exception of the Great Leap Forward interregnum between 1959 and 1962). The average annual growth rate of agricultural production per capita was 2.74% in China and 0.69% in India between 1961 and 1990. The average annual growth rate of labor productivity in agriculture was 2.8% in China and 1.1% in India in the same period (author's calculations based on UNCTAD, 1993, pp. 470-472; Fan & Chan-Kang, 2005, p. 139; Saith, 2008, p. 230).²

² Average annual growth rates of different development indicators that I calculated are compound growth rates. The starting year of the FAO's time series data (used by UNCTAD, Fan & Chan-Kang, and Saith) is 1961. Since China's agricultural productivity was at its lowest level in that year due to the Great Leap Forward catastrophe, this data might at first seem to exaggerate China's overall performance. However, it also shows that the gap between the two countries in terms of per capita and per farmer productivity remained consistently and significantly high between 1965 (when Chinese agriculture fully recovered) and 1990.

Rural industry contributed to about 18% of China's national income and less than 8% of India's in 1990 (Sivasubramonian, 2000, pp. 639-644; author's calculation based on Bramall, 2007, p. 56 and Zhongguo Xiangzhen Qiye ji Nongchanpin Jia Gongye Nianjian Bianji Weiyuanhui, 1991, p. 133). The annual growth rate of rural industry was 13.27% between 1962 and 1978 and 19.3% between 1978 and 1990 (author's calculation based on Bramall, 2007, p. 23, 56). Between 1961 and 1990, the average annual rate of growth of India's village industries was slightly less than 7% (Kumar, 1997, pp. 48-49). Between 1971 and 1990, the average annual growth rate of India's unregistered enterprises in agro-based industries (comprising food, beverage, tobacco, textile, wood, paper, and leather products) was about 5% (Alagh, 1996, p. 24).³

In sum, China's rural economy had developed much more rapidly than India's in the post-1950 era. Since the rural economy remained a significant portion of their national economies, this gap played an important role in the divergence of the Chinese and Indian economies.

The Limitations of the Economic Liberalization Explanation

The dominant approach in the literature on China and India's economic development, which I label the "economic liberalization thesis," views private enterprise and free market as the twin pillars of successful economic development. This approach takes the degree of incentives provided to the private enterprise as a leading factor behind the differential economic performance of different national economies in history. As long as the private entrepreneurs (including the small, medium, and large farmers, industrialists,

³ 73.69% of the unregistered industrial enterprises and 70.86% of the workers in the unregistered industries were located in the rural areas in 1974-75 (Gupta, 1982, p. 29).

and traders) are entitled to clearly defined and well-protected property rights, they are believed to be capable of generating dynamic and sustained economic growth. Free markets are suggested to provide these agents the space to realize their creative potential. Capital and labor mobility allows the entrepreneurs and workers to reap their profit and income potentials to the maximum. The most hardworking and creative agents get the highest rewards/profits within this system and vice versa. According to the economic liberalization scholarship, the primary task of the state in economic development is to promote this sort of economic environment. Hence, private ownership of the means of production should be protected by the state. Markets and private commerce should be unrestricted. State intervention to the market has to be kept to the minimum and restricted mostly to the prevention of the over-monopolization of the economy that may disincentivize the medium and small enterprises. Maximum freedom of mobility has to be allowed to both capital and labor (Acemoglu & Robinson, 2012; Bhagwati, 2010; Friedman, 2005; Gilley, 2005; Huang, 2008; Huang & Khanna, 2005; Lin, 1992, 1998; Nolan, 1988; Qin, 2005).

Of course, different scholars have advocated very different ideas with regard to the various themes related to rural economy (including the extent of land reform, the optimum scale of farm production, the ideal level of government spending to the rural economy, government's role in the determination of agricultural prices, whether agricultural prices should be inflated to incentivize the farmers, whether government should protect the rural industry from the competition of the urban industry, etc.). Despite these possible areas of disagreement, however, the economic liberalization scholarship views rural economic development from the above-mentioned perspective that prioritizes the private enterprise and free market.

In order to fit the China-India story to their theoretical framework, economic liberalization scholars do not problematize and investigate much the trajectories of the rural economies of China and India before 1978. At times and in places where they have to touch this issue, they assert that both economies were equally illiberal with state intervention restricting private enterprise and market freedom in both countries. For instance, Edward Friedman suggests that “in the Mao era, ruling groups in both China and India ill-served their people by entrenching economically self-wounding institutions borrowed from Stalin’s Soviet Union, including a policy of economic autarky, which denied their people the benefits of exporting to the world market” (Friedman, 2005, p. 192). Bruce Gilley remarks similarly:

The communist state significantly slowed the growth trajectory that began in the Republican era, and thereby eliminated China’s natural growth advantage over India until the reform period. Slow absolute growth in both countries in the pre-reform period was because both countries pursued bureaucratic Leninist command economies—Nehru was as disdainful of economic freedom as Mao (Gilley, 2005, p. 25).

In the same vein, Qin Hui argues:

Following “Nehru-type” socialism after Independence, India was always defined by the former Soviet Union as “a country embarked on the road of non-capitalistic development.” Given that it practiced a federal system enabling communist parties to long hold power in places like Kerala and West Bengal, India can hardly claim to be “capitalist.” Politically, while it practiced something resembling Western constitutional democracy, its economy was more of the command type. This is underscored by the large proportion of enterprises that were state-owned, the strictness of its market controls, and the many protective measures in place in foreign trade (Qin, 2005, pp. 73-74).

Hence, economic liberalization scholarship assumes that both countries performed equally badly before 1978 (Bhagwati, 2010; Friedman, 2005, p. 192; Gilley, 2005, pp. 24-25; Qin, 2005, p. 74, 81). According to this approach, what changed this situation was the launching of market reforms in China in 1978.⁴ It suggests that these reforms removed the

⁴ As noted above, the data provided by the IMF, United Nations, and the Maddison project database, an updated version of the data compiled by the eminent economist, Angus Maddison (Maddison [2003] 2006), demonstrate that in contrast to the pre-1950 period, per capita GDP grew much more rapidly in China than in India between 1950 and 1978. On the other hand, Friedman asserts that “there never was a factual basis

restrictions on private property and enterprise, freed the markets, and thereby brought China to the path of long-term growth and prosperity. This is presented as the reason for the widening gap between the economies of China and India. As the explanation goes, the Indian government became aware of the necessity of economic liberalization and therefore launched similar reforms in 1991 that liberalized the economy in the following years, which finally brought the country into a serious economic race with China. For example, Jagdish Bhagwati, the most famous advocate of the economic liberalization thesis in the India literature, writes:

Both giants slept on – until the 1980's in China and the early 1990's in India- mainly because both countries embraced a counter-productive policy framework that crippled the productivity of their investment efforts. Reflecting flawed economic arguments, India embraced autarky in trade and rejected inflows of equity investment. It also witnessed economic interventionism on a massive scale, including the proliferation of public-sector enterprises in areas beyond public utilities. In China, the results were similar, as the political embrace of communism meant going autarkic and giving the state a massive role in the economy. After progressively dismantling their inefficient policy frameworks in favor of 'liberal' reforms, the two giants began to stride forth. The race was finally on (Bhagwati, 2010).

Accordingly, China's persistent lead in this race is due to the headstart it got in carrying out market reforms. Huang and Khanna argue: "Why is the gap in GDP and other

for the two standard pieces of conventional wisdom for comparing India unfavorably with China, that...India was a failure and China a success...While India was bad, China was worse. Per capita income in China at the end of the Mao era was lower than in India" (Friedman, 2005, p. 192). Friedman is correct that China's per capita GDP was lower than that of India at the end of the Mao era. In 1976, the year Mao died, per capita GDP was \$853 in China and \$889 in India (Maddison Project Database, 2013). However, this piece of information alone does not support Friedman's claim. In fact, the gap between the per capita GDP of the two countries decreased from 38% in 1950 to only 4.05% in 1976. Moreover, Friedman does not provide us any alternative time-series dataset proving the faultiness of the data of the IMF, UN, and the Maddison project. On the other hand, Qin cited one of Maddison's earlier works (Maddison, 1989) to support his claim that Chinese economy did not perform better than its Indian counterpart before 1978 (Qin, 2005). Gilley referred to Qin's article to make the same argument (Gilley, 2005). Although both articles were published in 2005, both Qin and Gilley failed to notice that two years before their publications, Maddison revised his earlier estimates and demonstrated that Chinese economy performed worse than India between 1870 and 1950 and significantly better than India after 1950 (Maddison, [2003] 2006, pp. 558-562) (On India's lead over China after 1870 also see Swamy, 2005). Unlike these three authors, other advocates of the economic liberalization thesis do not try to reject the reliability of the available data sources. Instead, they have tended to not discuss the data about the pre-1978 era and start their comparisons with the year 1978.

benchmarks still so wide? It is worth recalling that India's economic reforms only began in earnest in 1991, more than a decade after China began liberalizing" (Huang & Khanna, 2005, pp. 172-173).

In this study, I argue that the economic liberalization thesis is incapable of explaining the divergence of the rural economies of China and India between 1950 and 1990. Contrary to its assumptions, the Chinese and Indian (rural) economies were radically different before and after 1978. Private ownership of the means of production was entirely abolished in China after rural collectivization in the mid-1950s. While state farms were established in some areas, collective farms controlled over 90% of cultivated land until 1980. In the same period, household members of the collectives had the use (but *not* ownership) rights of only about 7% of the total cultivated area in the form of household plots to produce crops and livestock for self-consumption and limited private marketing. Rather than completely privatizing agriculture, the Household Responsibility System (HRS) that was adopted between 1979 and 1984 brought a transformation from completely collective to a semi-collective/semi-private landownership and farming system. Local governments at the village level and above, *not* the households, continued to be the sole owners of farmland. Family farming was re-established but unlike the pre-collective era and due to the legacy of collective farming for over two decades, village collectives/administrations and villager groups continued to organize a substantial portion of agricultural production in the 1980s. In stark contrast to China, private sector controlled more than 97% of India's agricultural economy and local government involvement in agricultural production was very limited (Nagaraj, 1991, p. 1003).

Similarly, collectives dominated rural industrial activities in China throughout the period. Although private sector's share in the rural industry gradually increased in the 1980s, by 1990 collectives was still producing two-thirds of the industrial output and providing half of the industrial jobs in the Chinese countryside. Moreover, the control of the government branches (especially the county administrations) over the production and employment decisions of these industries remained strong during the 1980s. In contrast to China, the unregistered enterprises that comprised the great majority of India's rural industry were under private control entirely. In fact, the share of the private sector in Indian manufacturing as a whole never dropped below 85% even during the heyday of state-led import substitution industrialization of the 1960s and 1970s and up until the liberalization of 1991 (Nagaraj, 1991, p. 1003; Sundararajan & Thakur, 1980, p. 819).⁵

Moreover, agricultural and industrial capital was almost entirely immobile in rural China until the early 1980s. Since the majority of the rural industries were controlled by the communes and brigades until 1984 and by the township and village governments after 1984 and developing rural industry was considered as a primary task and criteria of success of the party-state cadres, industrial capital's mobility remained highly restricted. Hence, even the industries in remote and less developed areas bringing low returns were generally

⁵ On the power of the private sector in India's import substitution industrialization see Chibber, 2003. It is also necessary to briefly stress the private capital's domination in India's savings and capital formation. Atul Kohli notes that private sector's share in total paid-up capital in India was above 90% in 1957 and remained above 50% until 1972. Starting in 1973, it remained below 50%, and dropped to slightly less than 30% in 1991 (Kohli, 2012, p. 45). This finding also confirms that private sector had a significantly larger share in India's economy than in China's. On the other hand, this piece of information is not sufficient to portray the private sector's share in capital investment comprehensively. Paid-up capital refers to "the amount of a company's total capital that has been funded by its shareholders" and it "can be less than a company's total capital because a company may not issue all of the shares that it has been authorized to sell" (www.investopedia.com). In order to obtain a more comprehensive picture, we need to take into account the figures on gross domestic savings and capital formation. Between 1951 and 1990, the share of the private sector in India's gross domestic savings and gross domestic capital formation was 78.8% and 51%, respectively (GOI, Ministry of Finance, 2012, p. A-8).

protected in the 1980s (Bramall, 2007). The household registration system reduced labor mobility in the countryside to a minimum. Restrictions on labor migration were gradually relaxed in the 1980s but still considerable by 1990. Although industrial licensing limited the mobility of capital in India until 1991, capital mobility was significantly higher in India than in China. Labor was significantly more mobile in rural India. Peasants of the poor provinces like Bihar supplied the labor force to the farms in wealthier Punjab for over decades. Villagers remained free to migrate and take jobs in other rural areas or the cities.

In contrast to China, where rural collectives transferred over 5% of their net income to the state until the early 1980s, in India the ratio of tax to total agricultural income was remained below 1% during much of this period. Furthermore, Chinese collectives taxed agriculture (and rural industry) further by allocating over 7.6% of their net income to collective accumulation and welfare funds. This sort of accumulation did not take place in India (Gandhi, 1966, p. 56; GOI, Ministry of Finance, 1972; State Statistical Bureau, 1983, p. 210).

Finally, based on its monopolization of rural trade through the mediation of the rural collectives, the Chinese government consistently underpriced the agricultural products until 1978 in order to tax agriculture indirectly and transfer the obtained surplus to agricultural and industrial modernization. Indian government wished to impose government monopoly over grain trade in the 1950s and early 1960s and for a brief moment in the 1970s but never managed to bypass the private traders and impose itself as the sole trading agent in this sector. Government control over markets remained much lower and agricultural products were not underpriced consistently in India. In short, while agriculture

contributed to rural economic development in China (through direct taxation, establishment of local funds, and price scissors), it was largely untaxed in India.

In short, compared to its Chinese counterpart, India's rural economy remained far more liberal and provided greater productive incentives to the villagers in the entire period between 1950 and 1990. Despite this, both agriculture and rural industry developed much more rapidly in China than India in this period. This reveals the serious limitations of the economic liberalization thesis in explaining the divergence of the rural economies of China and India.

Alternative Argument

If the economic liberalization thesis falls short, then what explains the divergence? In this study I argue that China was much better at developing physical infrastructure and human capital in the countryside and that this was a key reason for the Chinese rural economy's superior performance. I start the comparison in 1950 because new states were established in both countries in the late 1940s, and they both started to implement ambitious new economic policies in the early 1950s. I close the study in 1990 because it was during the subsequent decade China actually did begin to implement radical policies that made the rural economy much more like India's.⁶ Before 1990, as I noted above and as I will

⁶ This study does not look beyond 1990 because the structural and organizational differences of the two countries' rural economies diminished significantly in the 1990s. This was not due to the economic liberalization of India after 1991 because as noted above, India's rural economy was much more liberal than China's before 1991. Instead, my choice of not looking beyond 1990 was due primarily to the significant liberalization of China's rural economy in the 1990s. Township and Village Enterprises were either closed or privatized in the second half of the 1990s. Moreover, Chinese local governments mobilized much less unpaid labor in capital construction projects after 1990. Similarly, in order to quell the rural unrest in the 1990s, the Chinese government gradually reduced the agricultural tax and abolished it altogether in 2006. In short, while the mobilization of labor and financial resources of the villagers played a key role in the divergence of two countries' rural economies, it became a comparatively negligible factor in the 1990s.

demonstrate in detail in the subsequent chapters, the rural Indian economy was far more liberal than China's.

I will show that India and China's rural infrastructure and human capital were similarly poor in the early 1950s, but that China was able to greatly outpace India in developing these resources over the next four decades because of effective state intervention. Since the Chinese state acquired greater capacity to mobilize unpaid labor and financial resources of the rural population through the mediation of the rural collectives and their institutional legacy in the 1980s, it was able to develop physical infrastructure and human capital at a rapid pace and with a broad geographical scope that was far beyond its limited fiscal capacity. In contrast, efforts by the Indian state to establish rural organizations with similar mobilization capabilities failed due to the effective opposition of well-entrenched political and economic interests in the countryside. In the absence of the mobilization of unpaid labor and financial resources of the rural population, the Indian government relied primarily on its limited fiscal resources, which produced a much slower and geographically narrower development of physical infrastructure and human capital. The increasing gap between two countries' rural infrastructure and human capital is one of the key factors that led to a significantly higher rate of agricultural and rural industrial development in China than in India during much of the post-1950 era.

Two important points underpin this argument. First, in very large and populous countries such as China and India, there have always been significant regional inequalities having important ecological, geographical, and historical reasons. Expecting to eradicate them altogether is unrealistic. On the other hand, less developed regions comprised a significant portion of the rural population and area in both countries in 1950. For this

reason, it was unrealistic to expect a rapid and sustained growth of the rural economy in both countries without incorporating these less developed regions into the development process.⁷ These regions did not have to grow very rapidly and catch up with the advanced areas completely but they were required to develop at a decent rate in order to keep the rural economy on a high growth track at the aggregate/national level. Second, in the early 1950s the great majority of the Chinese and Indian villages (including many in the relatively advanced areas) lacked the basic infrastructure (electricity and irrigation), technology (farm and industrial machinery), and human capital (a healthy, literate, and relatively skilled labor force) that were necessary for achieving rapid and sustained economic growth. As long as these bottlenecks remained present, incentivizing the villagers (through the promotion of private enterprise, free market, light taxation, higher subsidies, and generous procurement prices) was incapable of developing the rural economy in any significant degree. Economic incentives are undeniably important but can become an important component of the development process only after the removal of these fundamental and formidable bottlenecks.

I argue that by mobilizing labor and financial resources of the villagers for over three decades, Chinese rural collectives enabled the development of physical infrastructure and human capital in less developed regions at a rate that was beyond the financial capacity of rural households and the state. In contrast, the Indian government's failure to mobilize labor and financial resources of the villagers to a comparable extent forced the less

⁷ I am aware of the conceptual difference between growth and development that is often made in the literature. On the other hand, since I distinguish "social development" (that involves the improvement of the educational level and health and nutrition conditions of the population) from "economic development" (that involves increasing the total and per capita output in different sectors of the economy) and point out to their linkages throughout this study, when discussing the changes in economic output, I use the terms "economic growth" and "economic development" interchangeably.

advanced rural areas to rely on the meager financial resources of private capital and the state. This produced to a much slower pace of development of the physical infrastructure and human capital. As a result, although the productive incentives given to villagers was much more limited in China than in India, stronger and geographically broader development of infrastructure and human capital enabled the former to develop its rural economy more rapidly than the latter before and after 1978.

As noted above, the Chinese economy remained less liberal than its Indian counterpart in the 1980s. On the other hand, starting in 1978 the Chinese government started to incentivize the villagers by lowering agricultural taxes, increasing crop procurement prices, freeing markets, allowing greater labor mobility, and demanding less unpaid labor for capital construction projects. Since the Chinese villagers accessed better infrastructure and technology and had higher skills due to the labor and financial mobilization in the previous decades, they utilized these incentives better than Indian villagers. The resulting divergence of their rural economies significantly impacted the general performance of the economies of China and India. The former caught up with and surpassed the latter before the start of the reform era in 1979 and the gap between the two increased in the 1980s.

The Role of Infrastructure and Human Capital in Rural Development

This study is informed by the developmental state literature, which stresses the limitations of a singular emphasis on private enterprise and free markets for understanding economic development and emphasizes the role of states in creating institutions capable of mobilizing the resources and population to precipitate economic growth. The roots of this line of scholarship is traceable to Gerschenkron's classical work revealing the important

role of the state in the development of successful latecomer industrializers like Germany and the Soviet Union (Gerschenkron, 1962). This thesis has been further elaborated in studies focusing on the state's role in the economic development in both the Western and non-western world such as East Asia (Castells, 1992; Evans, 1995; Tilly & Tarrow, 2006; Woo-Cummings, 1999). A wealth of scholarly work has established that the degree of development of physical infrastructure and human capital has been one of the key determinants of the differential performance of agriculture and rural industry both between the countries and between different regions within countries (Chai & Roy, 2006; Hayami, 1975; Hayami & Ruttan, 1985; Ishikawa, 1967, 1981; Saith, 1992, 1997, 2008). The literature comparing agricultural and industrial performance of different regions within China and within India in the post-1950 era has confirmed this finding (Bhalla, 1990; Bhalla et al., 1995; Boyce, 1987; Bramall, 2000, 2007, 2009; Dayal, 1984; Fan & Chan-Kang, 2005; Fan et al., 1999; Fujita, 2013; GOI, Government of India, Ministry of Irrigation and Power, 1972a, 1972b; Gupta, 1982; Kale, 2014; Khurana, 1992; Kumar, 1997; Patnaik, 1997; Streefkerk, 1985).

The development of physical infrastructure and technology

The development of physical infrastructure and technology lies at the heart of the development of rural economy. There are two types of technology in agriculture: land-saving and labor-saving technology. Land-saving technology aims to increase output per unit of land without trying to save labor. It can increase per capita output if the population growth rate is not high, but its main goal is increasing land productivity. Land-saving technology includes fertilizers, seeds, and pesticides. These inputs have been used over centuries, and starting in the late 19th century the industrial sector gradually became the

main supplier of these inputs to farmers. Hence, a wide range of chemical fertilizers, high-yielding seeds, and pesticides have been disseminated within world agriculture since the late 19th century.

Labor-saving technology aims to increase output per capita. Although it may also increase land productivity, its main goal is increasing labor productivity. In the pre-industrial era, bullock cart (usually worked with a pair of oxen) was the main labor-saving technology. Starting in the late 19th century, the use of farm machinery such as tractors and combine harvesters has led to significant increases in labor productivity in agriculture. Although various types of small farm machinery have been used especially in East Asia where the scale of agricultural production has remained much smaller than other world regions, it is well established that the introduction of farm machinery requires a minimum scale threshold and increasing the production scale enables the better use of it. It is also clear that land and labor-saving technologies are mutually supportive and mechanized farms also use significant quantities of land-saving technology. The growth of agricultural production as well as the agricultural productivity differences among nations since the late 19th century has been based on the pace of the dissemination of these two types of agricultural technology (Hayami, 1975; Hayami & Honma, 2008; Hayami & Kawagoe, 1989; Hayami & Ruttan, 1985; Robinson, 1979, p. 56-57).

On the other hand, the development of hydraulic infrastructure is the precondition of the effective use of agricultural technology for two main reasons. Firstly, it decreases the negative impact of natural disasters on crop yields and stabilizes production. Dikes, embankments, and water discharge facilities protect the fields from floods and waterlogging to a significant extent. Accumulating water in dams and reservoirs reduces

the adverse impact of droughts on crop yield. Irrigation is the precondition of the effective use of land-saving technology. Without a sufficient water supply, land-saving technology is unable to increase land productivity significantly. For this reason, irrigation has been one of the key technological inputs in the agricultural development worldwide and certainly the key input in the growth of paddy rice production in Asian countries including China and India (Hayami, 1975, p. 200, 213; Hayami & Ruttan, 1985, p. 291; Ishikawa, 1967, 1981).

With the development and increasing dissemination of electric-powered tubewells and drainage tools in the 20th century, electricity became an increasingly important component of hydraulic development. On the other hand, hydraulic development has also included the construction of hydropower stations, which increased the production of electric power, and thereby made the greater use of electric-powered irrigation and drainage technology possible.

As in irrigation's role in agricultural development, electricity has been the precondition of successful rural industrialization starting in the 20th century. Although regions having strong rural industries often have a historical background in traditional handicrafts, over time rural industries' success has depended increasingly on their ability to move beyond handicrafts and towards mechanized production. Rural industries capable of using modern machinery became able to meet a part of the local demand and also to serve the larger urban industries through subcontracting relations.

For these reasons, this study primarily focuses on electricity and hydraulic infrastructure as the main indicators of the development of physical infrastructure in China and India.

Human capital

Human capital mainly refers to the development of a healthy, educated, and relatively skilled labor force. Although the positive roles of education and healthcare in economic development were not entirely unknown in previous periods, their importance has been better recognized since the Industrial Revolution in the second half of the 18th century. The positive relationship between health and labor productivity is a well-established fact today (Aziz, 1995; Bloom et al., 2004). The historical experience of Germany, Russia, and East Asia demonstrate the existence of a similar relationship between education and labor productivity (Balakrishnan, 2010, p. 91; Eklof, 1987; Hayami & Ruttan, 1985, pp. 206-207; World Bank, 1993, pp. 192-202).

The development of human capital makes a significant contribution to rural economic development. The construction and maintenance of physical infrastructure, schools, and clinics in the countryside requires a large labor input. Although the use of farm machinery reduced the need for labor in the long run, the intensification of agricultural production (through double and triple-cropping) also requires a large labor input. Increasing agricultural and rural industrial output necessitates the reduction of lost workdays due to illness to a minimum. Only a healthy labor force can work long hours, intensively, and with a strict discipline. Moreover, although the contribution of illiterate laborers to rural production should not be underestimated, literacy has been an important contributor to labor productivity in rural economy, especially in rural industry. A literate villager can read basic training materials and manuals about new agricultural and industrial machinery and techniques and utilize them in a timely manner. Managers of farms and rural industries require basic literacy and math knowledge to keep accounts and records

properly. Ability to carry out written communication and read and write contracts and reports helps the establishment of strong subcontracting relations between rural and urban industries. In short, a healthy, literate, and relatively skilled labor force is a key requirement of successful rural economic development.

Physical infrastructure and human capital in China and India in 1950

The rural areas of China and India lacked basic infrastructure, technology, and human capital in 1950. The ratio of irrigated area to total cultivated area was only 17.9% in China and 17.8% in India in 1952 (GOI, Ministry of Labour, 1955, Appendix VII, p. f; Zhongguo Shuili Nianjian Bianji Weiyuanhui, 1992, p. 653). Less than 1% of the villages had access to electricity in both countries at that time (Lei, 1984, p. 29; Samantha & Sundharam, 1983, p. 19). Death rate (per 1000 people) was 20 in China and 27.4 in India in 1950. Life expectancy at birth was 35 years in China and 32 years in India in the same year (China Daily, 2002; Government of India, Ministry of Finance, 2012, p. a2; Zhongguo Tongji Ju, 1990, p. 90). Literacy rate was 12.1% in rural India in 1951 (Government of India, Ministry of Finance, 2002). The same figure was below 20% in China as a whole (Gamberg, 1977, p. 41; Gao, 2012) and was probably lower and very close to India's level in the countryside. In short, both countries lacked basic infrastructure, technology, and human capital in the countryside by 1950.

Mobilizing Rural Labor and Financial Resources

Capital scarcity

The leadership of the Chinese Communist Party (CCP) and the Indian National Congress (INC) both recognized that that modern rural development required the building

of physical infrastructure and human capital. Since rural China and India were both vast and heavily populated, achieving these goals necessitated a strong and long-term investment program. In both countries the private sector was too weak and reluctant to make significant investments into the rural economy, especially in the most underdeveloped regions that did not promise short-term profits. Hence, regardless of their ideological differences about the private economy, both the Chinese and Indian leaders agreed that the state was the only agent capable of making investment of such magnitude. However, due to the combination of economic underdevelopment and the fiscal decline, both states lacked the fiscal capacity to carry out an ambitious investment program.

Facing the problem of capital scarcity, Chinese and Indian governments had three alternative paths to choose from. The first path was accepting a low rate of rural economic development that could be sustained through moderate private and public investment, which can be supplemented by foreign assistance to the extent possible. For instance, among various possible modest paths, a minimum-needs strategy (implemented by Sri Lanka in the post-1950 era) concentrating on social development and improving the quality of life without much capital accumulation and heavy investment was present as an alternative. The second path was investing very little into the urban heavy industry and national defense and concentrating most of the available funds on agriculture and rural industry.

However, neither the CCP nor the INC considered these paths acceptable. Instead, they chose the third (and the most difficult) developmental path. Starting in the early 1950s both countries embraced an ambitious heavy industrialization strategy along the lines

proposed by the Soviet economist, G.A. Feldman.⁸ They also allocated significant funds to military buildup, which eventually led them to establish large armies and join the nuclear club in the 1960s and 1970s. On the other hand, as noted above, due to the heavy weight of the rural economy within their national economies, achieving rapid and sustained economic growth was impossible without investing significantly in the rural economy. This brought the problem of the scarcity of capital (i.e., development finance) to the forefront of the rural policy debates and strategies in both countries.

Foreign assistance appeared as a factor that might alleviate this problem to a certain extent. Geopolitical factors and choices impacted the two states' capability of using this source. China fought against the US-led military coalition in the Korean War in the early 1950s and viewed the US as its enemy until the early 1970s. During the 1950s, China received significant assistance from the USSR. However, two countries' relationship rapidly deteriorated and the Soviet assistance halted in the early 1960s. China experienced a significant international isolation during the 1960s when it became the enemy of the US, USSR, and India simultaneously. Although its relationship with the United States started to improve in the 1970s, China did not receive any substantial aid from the US. Moreover,

⁸ G. A. Feldman proposed a two-sector model that divides industry into two parts: capital/investment goods and consumer goods. Although increasing consumer goods is important to improve the living standards of the general population, Feldman proposed allocating greater financial resources to the production of capital goods among which the iron and steel had primary importance. Since many of the consumer goods use the inputs of the investment goods, there was no major contradiction between these two sectors according to Feldman. The reinvestment of the majority of the industrial profits for the expansion of the capital goods industries (instead of investing it to the production of consumer goods and/or redistributing it to the working population) could increase a country's capacity to produce more consumer goods in the long run (Allen, 2003, pp. 54-57). Prasanta Chandra Mahalanobis (who founded the Indian Statistical Institute in 1931 and played an important role in the preparation of India's five-year plans in the 1950s and 1960s as a leading member of the Planning Commission, which was the most important economic policy-making institution in India during that time) developed a theory of industrialization which is essentially the same with that of Feldman. Although Mahalanobis stated that he was not aware of Feldman's work during the formative period of his theory (Balakrishnan, 2010, p. 46), this economic theory came to be known as the "Feldman-Mahalanobis model" in the literature.

due to its quest to overcome international isolation through developing good relations with the Third World governments (such as Pakistan, Tanzania, and several others), China became the largest non-OECD international aid provider in the 1960s and 1970s. The financial assistance it provided to other countries significantly exceeded the Soviet assistance that it received in the 1950s. As a result, China became a net capital exporter in the post-1950 era. Hence, foreign assistance did not make a significant contribution to China's development finance.⁹

In contrast to China, India usually followed a pragmatic and skillful international relations strategy during the Nehru era and after. This enabled it to receive significant financial assistance from both sides of the Cold War (the US and the USSR) and international institutions such as the World Bank, Asian Development Bank, Ford and Rockefeller foundations. Foreign assistance comprised about 3% of the net national product, 12% of gross domestic capital formation, and 28% of the central government's capital expenditures in India between 1960 and 1980 (author's calculation based on Sukhatme, 1989, p. 206). Unlike China, India did not become a major international aid provider during this period. It also did not invest much abroad. Hence, India remained a net capital importer during much of the 1950-90 period. This reduced its capital scarcity to

⁹ There are vastly different estimates of the amount of the assistance of the United Soviet Socialist Republics (USSR) to China in the 1950s, from a lower bound of \$1.3 billion (Zhu, 2001, p. 8) to an upper bound of \$5.4 billion (Wen, 2012, p. 39). Even if we accept the upper estimate, the Soviet assistance to China in the 1950s turns out much less than the Chinese assistance to other less developed countries between 1950 and 1980. In 1972, when China's total GDP was less than one third of the USSR, its aid to other countries surpassed the amount provided by the USSR. The share of foreign aid spending within China's total GNP increased from 0.23% in 1950-52 period to 2.05% in 1973. In the same period, the share of foreign aid in China's total financial spending increased from 0.62% to 6.9% (Li, 2008, p. 7). By 1980, the PRC had already provided \$9 billion of aid to over seventy less developed countries. This was the largest amount of aid given by a non-OECD country (Zhu, 2001, p. 11). In fact, the ratio of net foreign capital inflow to China's GDP was -0.7% in 1960-64, -0.5% in 1965-69, -0.6% in 1970-74, -0.2 in 1975-79, -0.8% in 1980-84, and -0.3 in 1985-91 (Chai, 1994, p. 507). In short, China was a net capital exporter during much of the 1950-90 period.

a certain extent. However, per capita effectiveness of foreign assistance was significantly lower in a vast and populous country like India than small countries with low populations (such as South Korea, Taiwan, and Turkey that benefited from the Western financial assistance significantly during the Cold War). Hence, although not as mighty as the challenges faced by China, India continuously struggled with fiscal problems, which required a solution *within* the country.

Mobilization of surplus rural labor

The imperative to solve the problem of capital scarcity within the country directed the attention of the Chinese and Indian leaderships to two main mechanisms of generating additional capital: the mobilization labor and financial resources of the rural population. We will start with the former and turn to the latter later on. Both states considered the possible ways to substitute labor for capital in order to develop physical infrastructure and human capital in the countryside rapidly.

Ragnar Nurkse's *Problems of Capital Formation in Underdeveloped Countries* was the first academic study discussing the subject of surplus rural labor and its possible uses for rural economic development systematically (Nurkse, [1952] 1967). In his book, Nurkse stressed the presence of a sizable surplus labor as a defining characteristic of the rural economies of large and populous underdeveloped countries:

The term disguised unemployment is not applied to wage labor. It denotes a condition of family employment in peasant communities. A number of people are working on farms or small peasant plots, contributing virtually nothing to output, but subsisting on a share of their family's real income. There is *no* possibility of personal identification here, as there is in open industrial unemployment...In an overpopulated peasant economy, we cannot point to any person and say he is unemployed in disguise. The people may all be occupied, and no one may consider himself idle. Yet the fact remains that a certain number of the labor force on the land could be dispensed with, without making any difference to the volume of output (Nurkse, 1952 [1967], p. 33).

Similar to Arthur Lewis, another eminent scholar writing on the subject of surplus rural labor in the 1950s (Lewis, 1954), Nurkse recognized the important role of the underemployed villagers as suppliers of cheap labor power to urban sectors. On the other hand, in contrast to Lewis, who viewed the potential role of surplus rural labor only through the lens of rural outmigration and urban employment, Nurkse saw massive rural to urban migration as neither feasible nor desirable for two reasons. First, the urban sectors of the underdeveloped countries were unable to absorb such a large labor supply. Second, urban unemployment and underemployment and poor living conditions in urban shantytowns did not appear as good alternatives to rural underemployment. Hence, Nurkse elaborated on the ways in which the surplus rural labor can find employment outlets and contribute to economic development and improvement of the living standards without leaving the countryside. Recognizing the severe scarcity of capital in the underdeveloped countries, Nurkse proposed to “consider more closely the possibility of taking the surplus people off the land and setting them to work on capital projects – irrigation, drainage, roads, railways, houses, factories, training schemes and so on” (Nurkse, [1952] 1967, pp. 36-37). Since the removal of a significant number of people from farming will not drop the agricultural output and the removed workers will continue to have the same amount of food on the table and share the same house with their family members as before, if governments manage to mobilize these workers in capital construction projects, they will not need to pay wages at all or pay very little to the workers:

The productive laborers are performing ‘virtual’ saving; they produce more than they consume. But the saving runs to waste, the saving is abortive; it is offset by the unproductive consumption of the people who could be dispensed with, who contribute nothing to output. If the productive peasants were to send their useless dependents—their cousins, brothers and nephews who now live with them—to work on capital projects and if they continued to feed them there, then their virtual saving would become effective saving. The unproductive consumption of the surplus farm population would become productive consumption. Thus the use of disguised unemployment for the accumulation of capital could be financed from

within the system itself. There is no question of asking the peasants who remain on the land to eat less than before, only of preventing them from eating more. What is wanted is that they go on feeding their dependents who leave the farms to go to work on capital projects and who, in effect, continue to be dependent for their subsistence on the 'productive' peasants remaining on the farms. All that happens is a re-allocation of labor in favor of capital construction (Nurkse [1952] 1967, pp. 37-38).

Nurkse acknowledged that surplus labor had been a mainly seasonal phenomenon in most countries. The need for farm labor peaks during the busiest agricultural season, during which labor shortage often emerges despite the existence of an enormous labor force. On the other hand, the seasonal character of the surplus rural labor does not make the labor mobilization strategy any less meaningful: "even when disguised employment is mainly a seasonal matter, the question of making productive use of it still has important implications in regard to capital formation" (Nurkse, [1952] 1967, pp. 35-36).

Nurkse argued further that most labor required for capital construction projects does not need to be skilled. Overall, then, conventional economic arguments of efficiency of and diminishing returns to extra input of labor does not apply to the mobilization of surplus rural labor: "Even if the direct marginal yield of labor is zero, the indirect yield of labor when applied to roundabout methods of production – that is, to the accumulation of capital – is likely to be very high in countries when capital is scarce" (Nurkse, [1952] 1967, p. 36). By transforming the (previously wasted) surplus labor into capital, the mobilization of labor in the countryside has the potential to bring a solution to the problem of capital scarcity in populous underdeveloped countries. In his famous work titled *Asian Drama-An Inquiry into the Poverty of Nations*, Gunnar Myrdal proposed a similar strategy for South Asia (Myrdal, 1977). On the other hand, long before the publication of the works of Nurkse and Myrdal, Mao Zedong wrote on the utility of labor mobilization and the CCP experimented with it in the liberated zones in northwestern China in the 1930s and 1940s (Mao, 1980; Schran, 1976).

Development literature has continued to address the question of the role of labor mobilization in rural economic development. For instance, Wen Tiejun has formulated the concept of “capitalization of labor power” (*laodongli zibenhua*) to argue that the mobilization of the underemployed villagers in capital construction projects and that of the urban youth (that could not be absorbed by the urban economy) in rural education and health campaigns as non-salaried workers during the Cultural Revolution made important contributions to China’s economic development in the long run (Wen, 2012, p. 54). Chris Bramall has also stressed the link between labor mobilization and the development of physical infrastructure and human capital in rural China. Two well-known Indian development scholars, Utsa Patnaik and Ashwani Saith have also investigated the contribution of labor mobilization to China’s rural development. They have also briefly suggested that the absence of labor mobilization might have played a role in rural India’s poorer economic performance (Patnaik, 1995; Saith, 2008, 2012) but have not tested this hypothesis with detailed empirical research, which this study aims to do. Finally, it is also worthy of notice that the literature on Israel, Japan, South Korea, and Taiwan has also stressed the positive contribution of the mobilization of rural labor without wage payment to the development of physical infrastructure in the countryside (Blasi, 1986; Hayami, 1975, pp. 198-199, Hayami & Ruttan, 1985, p. 309; Ishikawa, 1981, p. 328; Looney, 2009, pp. 120-129, 187-200; Park, 1998, pp. 69-145; Park, 2009; Smith, 2001).

Mobilization of rural financial resources

On the other hand, although the mobilization of the unpaid labor power of the villagers would alleviate the problem of capital scarcity significantly, it was insufficient to solve it completely. Establishing modern agriculture and industry in the vast countryside

required large capital investment, which cannot be solved by labor mobilization alone. This directed the attention of the Chinese and Indian leaders to the question of agricultural taxation.

Based on the existing literature, it is possible to define three forms of agricultural taxation in the 19th and 20th centuries. First, the states called the villagers to establish local funds (through compulsory savings) in order to finance a portion of the local investments. Japanese villagers used the local funds to carry out a significant portion of the local infrastructure works (Ishikawa, 1981, p. 328). Soviet collectives and the Israeli Kibbutzim maintained large local funds through compulsory savings in order to finance a portion of capital investment. During the New Village Movement, South Korean villagers covered 62.7% of the total infrastructure investment in the countryside. During the Community Development Campaign, Taiwanese peasants covered 39% of the total infrastructure investment in rural areas (Looney, 2012, p. 129, 198; Park, 2009, p. 126).

Second, a significant portion of the agricultural surplus was taxed directly by the state. For instance, Ho-fung Hung demonstrated that state capacity to tax the agricultural surplus was one of the main factors behind the differential industrial performance of the Qing China and Japan in the 19th century. According to Hung, while the former failed to discipline the rural elite and tax agriculture, the latter succeeded in this respect and allocated increasing amount of funds to the industrial sector (Hung, 2008, pp. 575-578). The comparative scholarship on East Asia, Latin America, and the Soviet Union also noted the importance of direct taxation of the agricultural income as one of the key determinants of the success of industrialization in particular and economic development in general (Allen, 2003; Karshenas, 2004; Kay, 2002).

Third, by establishing (complete or partial) monopoly of the agricultural trade, many governments kept the rise in agricultural prices at a lower level than the rise in the price of the industrial goods purchased by the peasants (especially the agricultural inputs supplied by the industrial sector like fertilizers). In other words, they opened up the “price scissors” in favor of the industrial sector. In his book titled *The New Economics*, published in 1926, the famous Soviet economist, Yevgeni Preobrazhensky provided the first systematic explanation of this particular mechanism of inter-sectoral resource transfer. According to Preobrazhensky, state monopoly of trade could provide the capital-scarce Soviet Union an effective tool to obtain the capital necessary for industrialization (Preobrazhenskiĭ, [1926] 1965, pp. 76-146). The Soviet Union used this mechanism effectively after the late 1920s (Allen, 2003, pp. 89-110; 172-186).

Although Preobrazhensky formulated his theory in accordance to the requirements of the Soviet Union, some of the capitalist states used essentially similar price mechanisms to finance capitalist industrialization through credit and subsidies given to the private industrialists since the late 19th century. For instance, the Japanese state had practiced it between the late 19th century and the 1960s, with the exception of the interwar period (Karshenas, 2004, pp. 176-183, 188). In Taiwan, under the rice-fertilizer barter system that was implemented in the 1950s and 1960s, the government kept the price of rice at a level that was about 30% *below* the world market price and sold fertilizer to the farmers at a price that was 50% to 100% *above* the world market price. In addition to that, with the assistance of the farmer associations, the Taiwanese government collected 650,000 tons of rice annually (which was about half of the marketable rice in Taiwan) through taxation in kind and compulsory delivery quotas in the same period. South Korean state also

implemented a rice-fertilizer barter policy during the same period to transform the agricultural surplus to development finance (Looney, 2012, pp. 117-118, 167).

Although the development literature has usually framed the issue of agricultural taxation as a question of transferring resources from agriculture to urban heavy industry, in fact, agricultural surplus had been used for a variety of purposes. A portion of it was used to develop heavy industries producing agricultural inputs and machinery and thereby contributed to agricultural development in all cases mentioned above. In Japan and Taiwan, the agricultural surplus was also utilized to promote rural industrialization. The Chinese state used the agricultural surplus for both purposes.

Rural Mobilization Strategies in China and India

The Chinese and Indian leaders viewed the mobilization of labor and financial resources of villagers as the most realistic and feasible way to implement a long-term and heavy investment program in the countryside. However, putting this strategy into practice was immensely difficult. The state had to create an atmosphere of dedication and discipline in the countryside for a long time. Mobilizing the villagers in backbreaking construction work without wage payment for years required the state to convince large sections of the peasantry that the assets they created would not be captured by the elites and would serve their long-term interests. This made the implementation of an effective land reform necessary before the launching of labor mobilization campaigns. Successful labor mobilization also required the creation of a strong belief among the villagers in the developmental effectiveness of cooperating with their neighbors and sacrificing their short-term interests for obtaining long-term benefits. For example, they should be convinced that working hard in capital construction projects would bring greater benefits than taking rest

or looking for jobs outside the village during the agricultural slack season. Effective taxation of agriculture similarly required a belief in the wisdom of sacrificing the short-term for long-term interests. For instance, peasants had to be convinced that benefits of pooling their meager surpluses in a collective accumulation fund would outweigh those of spending them for immediate consumption. Finally and equally importantly, effective mobilization of labor and financial resources of the villagers required the state to acquire the capacity to use compulsory methods whenever the voluntary ones do not work. These necessitated a radical reorganization of the rural economy through installing strong state-directed rural organizations.

This study argues that Chinese state succeeded to establish this sort of rural organization. The radical land reform of 1947-52 and the rural collectivization after 1952 left no elite intermediary between the party-state and the peasantry. This flattening of the political economic terrain enabled the state to establish the rural collectives in every single rural region. Rural collectivization created a giant *non-salaried* bureaucracy in the countryside. Establishing party organizations in every commune (comprising over 3300 households by 1978) and brigade (comprising about 300 households) along with administrative apparatuses of the state helped the Chinese government to demand services from the rural cadres as part of their obligations as party members and without paying them wages. Every Chinese commune had a few salaried cadres who were urban residents and functioned as the formal link between the higher-level administration and the commune. However, the remaining part of the commune administration did not receive salaries. More importantly, there were about 7 million cadres at the brigade level and 15 million cadres at the team level (comprising about 40 households). Although these cadres fulfilled crucial

administrative and economic functions (comprising policing, taxation, agricultural extension services, and industrialization), none of them were on government payroll. This reduced the financial cost of rural administration significantly.

The non-salaried collective cadres mobilized the country's vast underemployed rural labor force in capital construction projects. The institution of "obligatory labor" and the payment of construction labor by work points enabled the mobilization of a vast amount of unpaid labor. Rural collectives mobilized more than one-quarter of China's total rural labor force in farmland and water conservancy works in the 1960s and 1970s. Moreover, rural collectives greatly reduced the destructive competition among the villagers (including activities such as breaking the other villages' dikes and diverting river water to one village or a group of villages at the expense of others), which was among the major factors behind the hydraulic decline since the late 18th century.

In addition to mobilizing a large portion of the rural labor force, Chinese collectives also mobilized the financial resources of the peasantry. In addition to transferring above 5% of their net income to the state in the form of direct tax, they also allocated over 6% and about 1.6% of it to collective accumulation and welfare funds, respectively. Finally, rural collectives transferred about 490 billion Yuan to state-directed agrarian modernization and industrialization effort via the mechanism of price scissors between 1952 and 1982 (author's calculations based on State Statistical Bureau, 1983, p. 210 and Sun & He, 2009, p. 7).

Jawaharlal Nehru and the Nehruvian economic planners paid close attention to the above-mentioned rural mobilization experiences of China, Japan, Israel, and the Soviet

Union.¹⁰ In the light of these international inspirations, the Indian government attempted to establish village councils and cooperative farms in order to implement a similar mobilization strategy. However, as we will see in Chapter 4, in contrast to these cases, post-colonial India had a strong rural elite that was very reluctant to be disciplined by the state and capable of resisting it. During the late 1950s and 1960s, the rural elites successfully established a large block of the landed peasantry (comprising about 80% of the rural population) that influenced all major parties (including the ruling Congress party and the right- and left-wing opposition parties), and defeated the state's rural mobilization strategy. As a result, cooperative farming scheme (that became the INC's official rural policy in 1959 because of Nehru's insistence) was not put into practice. Two decades later, all cooperative farms (including the bogus ones) comprised only 0.3% of the country's total cultivated area. Village councils were established everywhere but instead of becoming the organizational ground of rural mobilization, they soon turned into institutions dominated by private economic interests and depending entirely on government spending. As a result, in contrast to the Chinese state which mobilized over one-quarter of the *total rural labor force* in capital construction projects continuously throughout the 1960s and 1970s without wage payment, the Indian government mobilized a maximum of 7% of the unemployed rural workers (*not* the total rural labor force) in capital construction projects for only temporarily and with wage payment. Other organizational attempts of the state to transfer a part of the responsibility of infrastructural development to the rural population (such as the villager-run irrigation associations) also failed.

¹⁰ Since the Taiwanese and Korean rural mobilization experiences noted above took place in the 1960s and 1970s, the first generation of Indian leaders and planners did not inspire from them.

As a result, the great majority of the infrastructure works (comprising irrigation, electricity, clinics, and schools) continued to be carried out by private contractors employing wage labor and paid out of government budgets. According to one estimate, the institutionalized corruption involving the private contractors and local government officials increased the cost of infrastructure works by more than one-quarter (Wade, 1982, pp. 292-295; Wade, 1984, pp. 295-296), and thereby increased the government's fiscal burden significantly. Also, in contrast to China where non-salaried cadres provided agricultural extension services in every single farming unit, the Indian government relied on salaried extension officers. Due to the fiscal constraints, on average one extension officer was able to serve a group of five villages. In short, agricultural extension services were more expensive and less effective in India. Finally, in contrast to China where rural collectives effectively reduced the destructive competition among the villagers (including activities such as breaking the dikes and tubewells of others and diverting river water to one village or a group of villages at the expense of others), Indian state failed to do so due to its weak organizational presence in the countryside.

The Indian government's attempt to mobilize the financial resources of the rural population faced similar obstacles. The rural block successfully forced the Indian government to let the agricultural sector remain untaxed, and increase development spending, subsidies, and crop prices from the mid-1960s on. The ratio of tax to agricultural income remained very low. Moreover, the state gradually lost its capacity to collect water fees from the irrigators. The resulting decline of canal and tank irrigation precipitated the expansion of electric-powered tubewells, which required less labor and financial cooperation among the farmers. However, this did not decrease the fiscal burden of the

state because the farmers' block successfully forced the state to reduce the electricity rates to a negligible level (Kale, 2014). Finally, local self-finance did not play any significant role in the construction and running of rural schools and clinics. In short, its failure to mobilize labor and financial resources of the villagers forced the Indian state to finance the development of physical infrastructure and human capital in the vast countryside with a narrow and weak urban tax base.

As a result, physical infrastructure and human capital developed at a significantly faster rate in rural China than in rural India. Moreover, effective taxation of the increasing agricultural surplus (due to the rapid development of physical infrastructure) enabled the financing of agricultural modernization and rural industrialization in the former. As a result, China's rural economy developed at a significantly higher pace than that of India's, which contributed to the divergence of the national economies of the two countries in the post-1950 era.

Sources and Methods

This study employs a mixed method strategy and uses qualitative and quantitative methods of data collection and analysis to compare the rural economic development in China and India between 1950 and 1990. As a work of comparative and historical sociology, it primarily derives from three types of written sources: secondary literature, government documents, and statistical data. As the discussion above has indicated, data availability is *not* the main problem with the existing literature on China-India comparison. On the contrary, there is abundant data on the themes addressed above that is scattered across the huge body of scholarship on the rural development of two countries that has been published since the 1950s. This enormous literature includes village ethnographies,

regional studies, and national level analyses of different aspects of rural development. The main problem of the existing literature comparing China and India is *not* data availability but the abundance of simplistic, ahistorical, and misinformed arguments. Therefore, by following the tradition of comparative and historical social sciences (such as Arrighi 1994; Moore 1966; Skocpol, 1979; Tilly, 1992), this study utilizes the large body of secondary literature to develop a historically well-grounded argument.

The second type of written sources that is utilized in this study includes reports and documents published by the central and local governments of China and India since the 1950s, which cover different themes (from hydraulic works and agricultural extension to rural industrialization) and regions. It is impossible to fully tap this huge data source in a limited amount of time and within a single study but I have used it extensively in this study.

The third type of written sources includes the statistical data on a variety of important items at the national and local level (GDP, agricultural production, industrial production, the expansion of hydraulic infrastructure, employment and unemployment, agricultural taxation, government expenditure, local self-finance, foreign aid/assistance) provided by Chinese and Indian national organizations (such as the National Bureau of Statistics and the Ministry of Agriculture of China and the Reserve Bank of India, National Sample Survey Office, Planning Commission, and the Ministry of Agriculture of India) and local governments.

Although the official statistics of both countries have problems, they are generally reliable for analyzing the performance of their rural economies comparatively. For instance, in his detailed report on the problems of different official data sources regarding irrigation in China, James Nickum has found that the Chinese irrigation data is largely

reliable (Nickum, 1995). Pan et al.'s detailed analysis on rural electrification in China has also pointed out various problems in different official data sources but confirmed its general reliability (Pan et al., 2006). Similarly, despite its various problems, the scholarly and policy communities have viewed the Indian official data no less reliable than the Chinese one and widely used it for analyzing the various aspects of the country's rural development and comparing them with those of China (Bardhan, 2010; Chai & Roy, 2006; Fan et al., 1999; Patnaik, 1988).

The data on rural industrialization in both countries requires more caution because successfully industrialized rural areas were often reclassified as urban areas in later periods. This was true in both countries and does not distort our comparative picture to any significant degree. Chris Bramall has demonstrated that this sort of reclassification was notable in China and the statistics on the collective industries have underestimated rural China's actual industrialization performance. Nevertheless, he stresses that even this data (underestimating the actual performance) demonstrates a very high industrial growth rate (of over 20%) for rural China between 1970 and 1990 (Bramall, 2007). On the other hand, I have not encountered any claim or evidence in the India literature that the reclassification of the rural areas as urban minimizes the country's rural industrialization performance to a significant degree (and more than Chinese statistics do).

While official Chinese categories clearly distinguish rural industries (Commune and Brigade Enterprises before 1984 and Township and Village Enterprises after 1984) from urban industries, the Indian categories are not as distinct. The scholarly literature on India's rural industries uses two main types of statistics to assess the country's rural industrialization performance. These include the statistics on the village industries and

those of unregistered industries. While the urban reclassification can affect the statistics on village industries, it does not affect those of unregistered industries because they are collected from both rural and urban areas. The studies on rural industrialization in India show that the great majority of the rural industries (including those located in the industrial estates) belong to the category of unregistered industries. Moreover, over 70% of all unregistered industries in the country were located in the countryside in the mid-1970s (Gupta, 1982, p. 29). None of the academic studies on the subject suggest that urban unregistered industries perform much worse than the rural ones and their inclusion in the data minimizes the actual performance of the rural industries. For this reason, as in the Indian literature on rural industrialization, I present data on both the village industries and the unregistered industries to assess the country's rural industrialization performance. Both figures are very close to each other (Alagh, 1996, p. 24; Kumar, 1997, pp. 48-49).

I also use the data published by international organizations such as the United Nations Food and Agriculture Organization (FAO), United Nations Conference on Trade and Development (UNCTAD), International Monetary Fund, and the World Bank. On national accounts and other related items, I mainly use Angus Maddison's data, which has been considered as the most reliable database on historical economic statistics, and the Maddison Project Database that provides the most updated data based on the original work of Maddison.

In addition to these main data sources, I also use the observations from my visits to a few villages in Hubei province in China and Tamil Nadu state of India. I do not rely on these observations directly for making big arguments. Nevertheless, they were quite helpful to direct my attention to important issues that I was not aware of before. To take just two

small examples, my visits to the Hubei villages enhanced my awareness of the continuing developmental contribution of the “small team” (*xiaozu*), which is a legacy of the production teams of the collective era, while my visits to villages in Tamil Nadu encouraged me to look more closely at the trajectory of labor mobilization in hydraulic development. I started to search the written sources on these themes only after learning their importance from local people. Additionally, I discussed the themes investigated in this study with many scholars and non-academic experts in China and India to whom I thank personally in the Acknowledgements and some of the footnotes in the following chapters. These conversations impacted the direction of my research significantly by taking my attention to several important themes that I either was not aware of or did not pay enough attention before. My colleagues in the Center for the Governance of Rural China at Central China Science and Technology University permitted me to use some of their unpublished reports based on detailed village fieldwork in different areas of China.

Temporal Boundary of the Study

This study focuses its analysis on the four decades between 1950 and 1990. I start the comparison in 1950 because two countries shared similar conditions of rural underdevelopment at that time, new and politically independent states were established in both countries in the late 1940s, and they started to implement new economic policies in the early 1950s. China’s rural economy was entirely collective until the transition to the Household Responsibility System in 1982, which established a semi-collective/semi-private farming system. As noted above, proponents of the economic liberalization thesis argue that liberalization in the 1980s led to the takeoff of the Chinese economy, surpassing Indian economy. In addition to comparing the two economies during the first three decades,

when China caught up with India, we must carefully compare the two economies during the 1980s, when China surpassed India. This study will demonstrate that during the 1980s China's rural economy was still less liberal than India's.

This study does not look beyond 1990 for two main reasons. The first is the feasibility of the research project. Analyzing rural China and India for these four decades is alone a quite demanding task. Drawing a strict temporal boundary seemed to me necessary to make the project feasible in a limited period of time. On the other hand, my primary reason of not looking beyond 1990 is that the structural and organizational differences of the two countries' rural economies diminished significantly in the 1990s. This was not due to the economic liberalization of India after 1991 because as noted above, India's rural economy was much more liberal than China's before 1991. Instead, my choice of not looking beyond 1990 was due primarily to the significant liberalization of China's rural economy in the 1990s. Township and Village Enterprises were either closed or privatized in the second half of the 1990s. Moreover, Chinese local governments mobilized much less unpaid labor in capital construction projects after 1990. Similarly, in order to quell the rural unrest in the 1990s, the Chinese government gradually reduced the agricultural tax and abolished it altogether in 2006. In short, while the mobilization of labor and financial resources of the villagers played a key role in the divergence of two countries' rural economies, it became a comparatively negligible factor in the 1990s. For these reasons, this study has not investigated the post-1990 period.

The Outline of the Study

This study is comprised of five chapters. After this Introduction comes Chapter 2, which examines the structure and activities of the Chinese rural collectives between the

mid-1950s and the decollectivization of agriculture in 1982. It introduces the reader the structure and historical evolution of the collective system. I demonstrate the close relationship between the collectives' mobilization of the labor and financial resources of the rural population especially during the agricultural slack seasons and the rapid development of the physical infrastructure and human capital in the countryside. Chapter 2 also demonstrates that the collectives enabled the state to penetrate for the first time in Chinese history into the lowest levels of the countryside. It made effective taxation of the agriculture possible. It also gave the state the power to use the mechanism of price scissors as a second agricultural tax to support industrialization in the cities and the countryside. Similar to other East Asian countries and the Soviet Union, this type of development finance involved a significant urban bias. Nevertheless, I will also demonstrate that urban bias does not necessarily mean rural underdevelopment by identifying the ways in which the state's strong control over the inter-sectoral resource transfers contributed to rural economic development in China throughout the period.

Chapter 3 continues the analysis of the previous chapter by making four interrelated arguments. First, it underscores the fact that most of the agricultural infrastructure that were in use during the 1980s (and indeed even today) was already established before the decollectivization of agriculture and played a key role in China's impressive agricultural growth performance in the late 1970s and early 1980s. Second, it demonstrates that many of the concrete institutional legacies of the pre-decollectivization period such as the mobilization of compulsory labor for the construction and maintenance of the hydraulic infrastructure and organizing many of the farm operations collectively remained strong during much of the 1980s. These two factors impacted agricultural performance positively.

Third, although the decollectivization of agriculture affected rural education and healthcare negatively, the continuation of the practice of self-financing rural schools and clinics helped the protection of much of the human capital gains of the previous period. Finally, the chapter delineates the primarily collective character of the rural industries in the 1980s by stressing the relationships between the development of the Commune and Brigade enterprises before 1984 and the Township and Village Enterprise after 1984 and linking both with the development of the state-owned enterprises at the county level and above.

Chapter 4 investigates the performance of India's rural economy between 1950 and 1990. It demonstrates that in stark contrast to its Chinese counterpart, the Indian state failed to establish strong rural institutions at the village level and above with a high capacity to mobilize labor and financial resources. Additionally, various attempts of the state to control and utilize the inter-sectoral resource transfers for industrialization failed. These two factors forced the Indian state to rely on its very limited fiscal resources to develop rural infrastructure and human capital and finance industrialization. Both during the Nehru era and after, the state tried its best to achieve these goals through government spending. Although these efforts were supported by significant sums of financial assistance and food aid by foreign governments, they were nevertheless insufficient to achieve these goals in the vast and populous countryside of India. Hence, Indian rural economy developed slowly and less broadly (in terms of the geographical scope) than China's. As a result, only a few regions such as Punjab and Haryana, which inherited a relatively more developed physical infrastructure and stronger class of entrepreneurial farmers, could develop agriculture rapidly. Similarly, only a few regions such as Gujarat, where rural industries were relatively more protected during the colonial period, could advance their rural industries

rapidly. In contrast to China, where many of the underdeveloped rural regions developed their economy rapidly due to the factors mentioned above, many of the heavily populated underdeveloped regions such as Bihar and West Bengal were unable to do so.

I will conclude the chapter with an analysis of the case of Kerala whose egalitarian land distribution and high human capital had set it apart from the rest of India and brought close to China. This analysis will show that although these factors can be helpful, successful rural economic development is difficult without the support of other components such as strong infrastructure and the diffusion of industrial labor and managerial skills. I will argue that these components were weak in Kerala because of its similarity to the rest of India in terms of a low degree of collective labor and financial mobilization. Kerala's experience also shows that a private sector-oriented rural development strategy with unrestricted mobility of capital and labor is no panacea for rural underdevelopment. Due to its better-organized labor force, private capital moved from Kerala to bordering states that had a less organized labor force and promised higher short-term profits. The combination of weak government finance and low private investment produced a very slow rate of rural economic development in Kerala.

Chapter 5, the concluding chapter, summarizes the main findings of this study and discusses their normative and policy implications.

II. ECONOMIC REVOLUTION IN RURAL CHINA (1952-1982)

As I have already examined the rationale for collective mobilization in order to develop the rural economy in China and India, below I will analyze the trajectory of the collective system and the performance of China's rural economy under it. This chapter aims to show that despite its significant problems, the institution of the rural collectives proved to be very effective in removing three main bottlenecks of China's rural economy (weak physical infrastructure, low human capital, and insufficient industrial capital) through collective mobilization. It will also demonstrate that although the Maoist leadership made two serious mistakes (the ill-conceived and poorly implemented Great Leap Forward strategy and more importantly, the reluctance to check the population growth) that took a heavy toll on the rural economy, collectives' successful performance in these three areas developed agriculture and rural industry dramatically and led to rural China's economic take-off before the beginning of the market reforms in 1979.

In this chapter, I focus on the three decades between 1952-53 (when the initial steps towards collectivization such as the formation of the mutual aid teams and state monopoly over rural trade were taken) and the end of collective farming in 1982-83. Durations of collective farming and collective industry were different in China. While collective farming ended in 1982-83, the majority of the rural industries remained under collective ownership throughout the 1980s. Hence, this chapter does not examine the *entire* life span of the collective system. On the other hand, since agricultural decollectivization was an important shift for China's rural economy, it appears reasonable to examine first the period during which agriculture and industry were both under collective control. We will turn to

the developments of the 1980s and their relationship with the previous period in the next chapter.

This chapter comprises eight sections. After this brief introduction, the second section introduces the main characteristics of the collective system. It will start with a presentation of the general social, economic, and political environment that was marked by the government control over land, labor, and the market. After that, I will describe the three-tiered structure of the rural collectives (the commune, brigade, and team) and explain the responsibilities of each. The third section briefly evaluates the transition to the collective system and the Cultural Revolution decade.

The next three sections analyze the mobilization of labor and financial resources of the rural population by the collectives in three areas of development: a. agriculture, b. rural industry, and c. human capital, which contributed to the previous two areas directly. The fourth section investigates the role of collective mobilization in the development of agricultural infrastructure and mechanization and explains how developed agricultural infrastructure and farm mechanization increased both total and per capita agricultural output during the collective era. The fifth section analyzes the collectives' self-financing of rural education and healthcare services and argues that rapid and (socially and geographically) broad development of human capital in the Chinese countryside would not be possible without collective self-finance. The sixth section focuses on three factors behind rural China's industrial miracle in the 1970s and subsequent decades: a. the transfer of the agricultural surplus to the industrial sector, b. the development of industrial infrastructure partially financed by the collectives, c. the development of human capital based on the expansion of formal schooling and learning by doing in the countryside.

Overall, this chapter will show that long-term and large-scale mobilization of labor and financial resources of the rural population by the collectives enabled the Chinese state to achieve a high degree of agricultural and rural industrial development that was far beyond its limited fiscal means. I will then evaluate the weaknesses of the collective system through a closer look at the Great Leap catastrophe. The concluding section summarizes the findings of the previous sections.

The Main Characteristics of the Collective System

From the early 1950s on, the Chinese party-state established a brand new economic and administrative system in the countryside, which is called the collective system. Despite numerous economic and political campaigns and continuous political struggles that marked the Mao era (1949-1976) and the first few years of the post-Mao period, the collective system remained intact for almost three decades. With the end of collective farming in 1982-83, a major part of this system was dissolved. However, as I will examine in the next chapter, various characteristics of the system remained strong during much of the 1980s.¹¹

Although this study focuses on the *rural economy* in general and *collective economy* in its analysis of the Chinese case, it is necessary to stress the fact that the rural collective was *not* only an economic organization. Similar to the collectivization experience of the Soviet Union, by eradicating private landownership entirely and reducing the sphere of the private enterprise, the collectivization of the rural economy actually merged the economic and administrative spheres in rural China. This merger was probably

¹¹ Although the private economy expanded its power significantly at the expense of the collective economy from the early 1990s on, some of the important economic and administrative functions of the collectives, such as the organization of compulsory labor at the village level and collection of the agricultural tax, continued to exist (albeit in increasingly weaker forms) up until the final abolition of the agricultural tax in 2006 (He, 2013; Lin, 2011).

the most pronounced in the Chinese case. In fact, the rural collective was a specific type of *local government* in China. It was a comprehensive administrative institution operating in areas as diverse as production, trade, taxation, education, healthcare, military, law and order, and political education/propaganda. Moreover, although the official discourse during the Mao era always emphasized the voluntary initiative of the masses in the foundation and operation of the collectives, in reality, no organizational form other than the collective was allowed to exist in rural China and every collective was obligated to fulfill these tasks without exception.¹²

From a long-term historical perspective, the rural collective seems to represent the continuity with the imperial and Republican efforts to make the state capable to *directly* penetrate and govern the countryside where the great majority of the Chinese population had lived. On the other hand, it signified a radical break from the past in two important respects. First, in contrast to the Republican and imperial states that failed to penetrate into the sub-county levels, let alone the natural villages, the PRC actually succeeded to achieve this goal via the rural collectives. Second, collectives fulfilled all the above-mentioned tasks without employing a large salaried bureaucracy. Every Chinese commune had a few salaried cadres who were township residents and functioned as the formal link between the higher-level administration and the commune. The remaining part of the commune administration did not receive salaries. More importantly, there were about 7 million cadres at the brigade level and 15 million cadres at the team level. None of them were on government payroll (Li, 2009). The lack of the financial means to employ a large salaried

¹² Other than the rural collectives, the only other production organization existed in the agricultural sector until the early 1980s was state farms. In 1982, state farms employed only 4,944,000 people while the total labor force of the Chinese collectives was 338,865,000 (State Statistical Bureau, 1983, p. 148, 203). In other words, state farms employed a tiny minority of the labor force in the rural economy.

bureaucracy was at the heart of China's problem of rural governance and directly affected the performance of the rural economy in the imperial and Republican periods (see Appendix A). By fulfilling several key administrative tasks without employing a salaried bureaucracy, rural collectives provided a fix to this problem that haunted the Chinese states over centuries.

How did this become possible? How did the Chinese party-state realize (and even *dare* to expect) the fulfillment of these diverse administrative tasks in the vast and poor countryside (in which large areas lacked a strong transport network and over 80 percent of the population was illiterate) without employing a large salaried bureaucracy? These questions bring us to another key concept of this study: *mass mobilization*. The history of the use of mass mobilization by the Chinese communists as a method of rural governance and development can be traced back to the CCP's experience in the liberated areas of North China in the 1930s and 1940s. Following its emergence as the *de facto* government of large areas, the CCP faced an urgent challenge of providing effective governance without a sufficient fiscal basis. During this formative period, mass mobilization gradually emerged as an important vehicle of administration and economic organization. The firm belief in the capacity of the human agency to overcome formidable problems and the conceptualization of the party-state organization primarily as an apparatus of mass mobilization, which were well reflected in the writings of Mao Zedong during this time, became the defining characteristics of the CCP's policy (Mao, [1945] 1980a; Mao 1980b; Selden, 1995). They informed the design of the collective as an institution of rural governance in the mid-1950s.

As we will see below, one of the central goals of the rural education policy was to rapidly raise a large number of literate rural cadres who were capable to act as the agents of the state in their locality. What the state expected from this new generation of cadres was to receive orders and instructions from the state, explain/propagate them to the villagers in an accessible language, mobilize the villagers to fulfill these tasks, and report the results back to higher authorities. These cadres were responsible to mobilize the labor power and financial resources of the rural population to achieve goals as diverse as carrying out healthcare and literacy campaigns, constructing village clinics, schools, irrigation facilities, factory buildings, fighting against natural disasters such as flood and drought, training the rural militia, collecting agricultural taxes, organizing rural trade in compliance with the state's trade monopoly, and forming villager groups for political propaganda. Without neglecting the significant role played by mass mobilization in the factional struggles inside the party-state,¹³ we therefore need to recognize these crucial administrative and developmental functions of mass mobilization in rural China. The rural collective emerged as the organizational apparatus of mass mobilization in rural China. In brief, by using the institution of the rural collective and the method of mass mobilization, the Chinese party-state aimed to decrease the cost of rural governance dramatically without compromising its ambitious development goals (He, 2007; Lao, 2006).

In order to completely understand the character of the rural collective as a special type of local government in rural China, it is necessary to examine three important areas of government control (over land, labor, and market) that was established with the collectivization between 1952 and 1956.

¹³ Mao Zedong's use of mass mobilization as a weapon against the party leaders such as Deng Xiaoping and Liu Shaoqi during the Cultural Revolution is the best-known example in this regard.

Government control over land

The abolition of private landownership through collectivization provided the state an almost absolute power to decide the use of rural land. Although the collective, not the state, was the legal owner of rural land, the state retained *the right of eminent domain*, which allowed it to confiscate rural land whenever it deemed necessary (Lu, 1992, p. 93). Since the production teams and brigades did not have political power to resist land use decisions made by the higher state authorities such as the commune administration and the county government, the state was capable of taking land without any significant opposition.¹⁴ Within this context, the amount of compensation packages given by the state to villagers for their expropriated land remained extremely low until the end of collective agriculture in 1982. Only after 1982, the Chinese government *gradually* amended the laws and regulations about land expropriation and increased compensations (Sun & He, 2009, p. 9). Between 1961 and 1982, it converted about 24.4 million mu (1.62 million ha) of rural land into urban land (used for the construction of industrial and residential areas) by giving negligible compensation to the rural collectives (Author's calculation based on Wen, 2012, p. 13). County and commune administrations were also capable of acquisitioning the land of the brigades, production teams, and small household plots to construct infrastructure and enterprises by paying them minimal compensation (Chan et al., 2009, p. 64; Endicott, 1988, p. 32; Ho, 2003, p. 103; Lu, 1992, pp. 101-102; Siu, 1989, p. 235; Zhang, 2005, p. 58; Zweig, 1989, pp. 43-45, 150-154, 166-168). In short, despite the legal distinction between

¹⁴ "Collectives could not alienate the land either between collective and private individuals, or between collectives. The only exception was state acquisition of collective land. In this case the state was always a buyer and the collective a seller, never the reverse. Such 'land exchange' imposed important changes on the economic conditions of the collective, which the latter as passive land seller simply could not resist" (Lu, 1992, pp. 95-96).

the collective and state property, in practice collective property was a *specific type of state property* in rural China.¹⁵

Government control over labor

Until the early 1980s, the Chinese government retained a significant degree of control over the rural labor force, which had two main components: the control over a. spatial mobility, b. employment prospects of the villagers. During the first few years of the collective system, Chinese villagers had a certain (albeit limited) degree of freedom to migrate to other rural areas or the cities. This freedom created the conditions for rapid urbanization. Urban population increased from 58 million to 92 million between 1949 and 1957. Nearly half of this increase was caused by rural to urban migration while the other half was due to the baby boom after the revolution. Despite rapid urban industrialization, the pace of employment creation in the urban economy remained slower than the pace of the growth of labor supply. As a result, urban unemployment increased rapidly (Bernstein 1977: 34-36; Potter & Potter, 1990, p. 297-298). In addition, a large migrant population in the cities might create a large informal economy outside the control of the state. It might also place an unbearable burden on the country's underdeveloped urban infrastructure. These outcomes were widespread in most of the Third World countries including India in the post-WWII era. In order to avoid the economic and political risks associated with

¹⁵ In her comparison of landownership in the Chinese and Soviet collectives, Lu Aiguo notes: "in China land was not only legally used by the collective, but was legally owned by the collective. In the Soviet Union, while collective was given land use for 'an indefinite period,' i.e. in perpetuity, the state was the legal landowner. The difference, however, appears to be *more nominal than substantial*, since it did not give rise to distinctive patterns of land utilization. With or without legal ownership title, neither commune (more precisely, the lowest level of the commune structure, i.e. the production team, on which formal land ownership rested) nor kolkhoz had full rights of land disposal. The right to sell, buy, and rent land –except as directed by the state- was severely restricted" (Lu, 1992, p. 90, emphasis mine).

unchecked urbanization, the Chinese state established the household registration (*hukou*) system in 1958.¹⁶

In order to achieve this goal, the hukou system divided the Chinese population into two groups (agricultural and non-agricultural)¹⁷ and placed strict restrictions on the change of residency. Since very few people desired to settle in the countryside, the main target of the system was obviously to restrict rural outmigration. In order to leave the countryside and settle in the city, each villager had to get permission from the state. Since the state granted such permission only to a tiny minority of the rural population (especially the youth who joined the army and were later recruited for urban factory jobs), the great majority of the agricultural population did not have any prospect of migrating to the cities after 1958.¹⁸ In short, the state acquired an almost absolute degree of control over the mobility of labor.¹⁹

¹⁶ The Minister of Public Security of the time, Luo Ruiqing explained the rationale for the establishment of the Hukou system precisely: “We must allow neither an unplanned increase in urban labor power nor an unplanned outflow of rural labor power. Furthermore, our country at present already has an excess urban labor power...From this point of view, it is not difficult to understand why we should stem the unplanned outflow of rural population. In addition, the unplanned rural population in the city, because of unemployment, is confronted with difficulty in making a living, and some people are likely to find themselves wandering in the street. A small proportion even go so far as to become hand-in-glove with some bad elements and engage in criminal acts like theft, robbery, and swindling, and thus produce a threat to urban security” (Potter & Potter, 1990, p. 302).

¹⁷ Although not all rural residents of China were agriculturalists, the Hukou system calls the entire rural population as the population with *agricultural residency* (*nongye hukou*), or simply, the agricultural population (*nongye renkou*). In the remainder of this study, I will use these terms interchangeably.

¹⁸ In fact, although becoming a low-rank soldier did not signify high status especially in wealthier rural regions before, it became a high-status position after 1958 because it was among the few mechanisms that could facilitate rural to urban migration (Zhang, 2005, p. 230).

¹⁹ It is necessary to underscore the fact that restriction on rural outmigration is not an inherent characteristic of the collective economies in general. For instance, in the Soviet Union, the state did not try to limit urbanization. On the other hand, we should keep in mind the fact that China’s urban population grew steadily, from 61,690,000 in 1950 to 211,540,000 in 1982 (State Statistical Bureau, 1983, p. 103). More importantly, contrary to popular characterizations in the literature, the hukou system was flexible enough to allow the employment of a significant number of villagers in urban sectors. For instance, there were about 10 million rural residents employed in the urban economy in the 1970s. Also, the number of people having agricultural resident status but living in urban areas increased from 28.75 million in 1965 to 57.27 million in 1980 (Chan & Xu, 1985, pp. 608-609). China’s steady urbanization between 1950 and 1980 without creating slums of unemployed and underemployed masses shows that the hukou system basically fulfilled its urbanization objectives. Of course, it undeniably created a caste-like hierarchy between the city and the countryside despite the official goal of overcoming rural-urban inequality. However, given the fact that the freedom of mobility did not decrease the spatial inequality in the Republican China, post-colonial India, and other populous

The rules of the hukou system were not strictly reinforced during the Great Leap Forward when unplanned industrialization led to very rapid urbanization (Bernstein, 1977, pp. 148-149; Bramall, 2011, pp. 1002-1003). After the end of the GLF in 1961, however, all regulations were strictly implemented. Also, as we will see below in the examination of the campaigns of sending the urban educated youth to the countryside, the state's control over labor mobility also enabled it to transfer the urban population to the countryside, which assisted rural development and reduced urban unemployment simultaneously. Second, although villagers could leave the membership of the mutual aid teams and elementary cooperatives, collective membership became compulsory in practice following the completion of the collectivization process in 1956. This dramatically increased the government control over the employment prospects of the rural population.

This brings us to the contrast in the employment opportunities and living conditions of the rural and urban population. While a small minority of the rural population worked in state farms, the great majority worked in the collective farms and industries. State-owned farms and factories paid fixed wages to their employees. Their employees had urban residency and thereby were covered under the umbrella of the formal social security system, which entitled them to urban-based welfare privileges such as the retirement wage and free access to higher quality healthcare services. Their children were able to enroll in urban schools whose quality was much higher than rural schools. In contrast, collective farms and factories paid their employees work-points whose value changed according to the output and profit levels in each year (and therefore the specific circumstances of each

underdeveloped countries, there is no indication that the freedom to leave the countryside might accomplish it in the PRC. Moreover, as this study shows, the PRC performed much better than the Indian government and the great majority of the Third World states in dealing with rural underdevelopment. A historically sound judgment on the hukou system has to consider these facts.

collective). A bad harvest meant less grain to eat and less cash income.²⁰ Collective industries paid wages to their workers but in contrast to the SOEs, these wages did not directly enter into the pockets of their workers. Reflecting the Maoist goal to reduce the gap between agricultural and industrial workforce and spread the benefits of industrialization widely, industrial enterprises at the brigade and the commune levels were legally obligated to remit the wages to the production teams their workers come from. Each team was responsible to combine this industrial income with its farm income and then distribute the final total among its members according to the work-points they earned (Potter & Potter, 1990, p. 123). This benefited the rural population in general but certainly dissatisfied most workers in rural industries. Moreover, the collective members were not entitled to a retirement wage and were unable to access the urban-based privileges such as higher quality education and healthcare services. These differences underline the character of the collective as a *special type of local government institution* in rural China. They also explain the rationale behind the Chinese state's choice to organize the rural economy under the collectives rather than state enterprises. Collectives fulfilled most of the functions of state enterprises but unlike them, they almost completely internalized the costs of administration and reproduction of labor power. They thereby dramatically relieved the burden on the Chinese state's limited fiscal resources.

²⁰ As Nolan correctly suggests, "although the ownership of their assets, their work organization, and income distribution are formally collective, in practice they are generally...state farms, except that the members are not paid wages (as in 'state farms' proper) but have fluctuating incomes depending on the harvest" (Nolan, 1988, p. 32).

Government control over the market

State monopoly over rural trade was one of the main characteristics of the political economic environment in which the collectives operated. It was served as the backbone of China's rapid industrialization in two important respects. First, the Chinese state had to keep the urban workers' wages low in order to pursue its ambitious heavy industrialization strategy smoothly. This required keeping the grain and other food prices low in urban areas. By enabling the state to determine the food prices, monopolization of agricultural trade served this end. Second, the state aimed to transfer the agricultural surplus to the industrial sector. In addition to direct taxation, this also involved the mechanism of price scissors, i.e., purchasing agricultural products from the peasants at a relatively lower price and selling industrial products to them at a relatively higher price. Apart from the modern consumer goods, agricultural technology and inputs (farm machinery, chemical fertilizers, pesticides etc.) comprised a sizable part of the industrial products marketed in the countryside. Hence, the monopoly over the marketing of industrial goods appeared as a potentially effective tool to obtain the agricultural surplus from the peasantry. As a result, the state monopoly covered not only the agricultural products but also the rural trade as a whole.

In the countryside, state monopoly started with the system of "unified sale and unified purchase" (*tonggou tongxiao*) of grain in November 1953. The "three fixed" policy was adopted in March 1955, through which the state established fixed quotas for the production, procurement, and sales for each grain producing unit. The state set low prices

for the grain delivered by the collectives (Li, 2006, p. 158; Li, 2009, pp. 246-248; Luo, 2008, pp. 177-234, Siu, 1989, p. 150; Zhang, 2005, p. 211). State monopoly expanded to other crucial items such as vegetable oil and raw cotton in 1954. Supply and Marketing Cooperatives were established in every township (called as “commune” after 1958) in order to purchase agricultural products and sell industrial products. Although the state allowed the peasants to market various types of agricultural products (especially fruits and vegetables) and rural handicrafts in the open rural markets, these markets were severely restricted until the late 1970s, with the exception of the period between 1961 and 1965 (Zhang, 2005, p. 82, 118, 211, 249). As Table 2 demonstrates, the share of the individual businesses in retail trade quickly dropped to a negligible minimum after the transition to the unified sale and purchase system.²¹ In brief, government control over the rural market was the norm between 1953 and the early 1980s.

Table 2. The Share of Different Economic Units in Retail Trade in China, 1950-1982 (%)

	1952	1956	1975	1978	1982
State-owned	16.2	34	90.2	90.7	76.6
Collective	18.2	37.5	7.7	7.2	16.1
Public-private partnership	0.4	20.8	0	0	0.1
Individual business	60.9	5.1	0.1	0.1	2.9
Peasant retailing	4.3	2.6	2	2	4.3

Source. Shangyebu Shangye Jingji Yanjiusuo (Department of Commerce, Commercial Economics Research Institute), 1984, p. 484.

After this examination of the three key areas of government control in the countryside that defined the collective system, we can now turn to the organizational

²¹ As its disappearance in the rest of the collective period indicates, “public-private partnership” (*gongsheying*) was a transitional category that was used during the nationalization and collectivization of the private enterprises. Hence, its increase from 0.4% to 20.8% between 1952 and 1956 reflects the increasing role of the public sector in commerce rather than the development of private commercial activities.

structure of the collectives. Chinese collectives had a three-tiered hierarchical structure comprising the production team at the bottom, brigade in the middle, and commune at the top. Each unit had to meet different responsibilities. A brief description of the main features of each unit is presented below.

Table 3. The Size of the Collective Units in Rural China in 1978

Type of unit	Number of Units	Average Size of the Units	
		Households	People
Commune	54,000	3,383	14,887
Brigade	600,000	299	1,315
Team	4,000,000	45	197

Source. Rawski, 1979, p. 76.

Production team

The production team (*shengchan dui*), or simply the team (*dui*), was the lowest level and smallest unit of the collective organization. After reaching the “working age” of 16, all able-bodied villagers were obligated to join the production teams (Saith, 2012, p. 41; Thorborg, 1978, p. 569). As Table 3 demonstrates, there were about 4 million production teams in rural China in the final years of collective farming. Although the size of the team varied significantly among different locations, on average a team comprised 45 households. The team was a unit that was generally compatible with a single natural village of the prerevolutionary era. On the other hand, in areas where natural villages were very large, they were divided into several production teams (Ho, 2003, p. 103; Shen, 2009, p. 9; Zhang, 2005, pp. 6-7). Since the natural village was the basis of organization and cooperation among the villagers in the pre-collective era, by transforming natural villages into production teams, collectivization strengthened the preexisting village solidarity. Although the political goal to transcend the pre-revolutionary identities of the peasantry

such as the lineage led some local cadres to decide to organize the teams by including people having different surnames, in many regions teams comprised people who share a single surname or a few surnames. In other words, the collective was a modern institution imposed by the state from outside but the general compatibility between the team and the natural village in most of the country underlined the strong continuity between the tradition and the modern in rural China (Lu, 1992, p. 177; Shen, 2009, p. 12; Zhang, 2005, pp. 6-7).

After the brief (and mostly unsuccessful) experiment with establishing the brigade (and in many local cases, even the commune) as the basic accounting unit during the Great Leap Forward, a consensus emerged that the team was the most proper accounting unit. Following the disastrous collapse of the GLF in 1961, the 10th Plenary Session of the 8th CCP Central Committee approved the “Regulations on the Work of the Rural People’s Communes,” on 27 September 1962. The document was known as the “Sixty Points on Agriculture” (*Nongye Liushi Tiao*) (CCP Central Committee, [1962] 1980). This had been the most important document on the collective system. Despite the continuous waves of political campaign and conflicts during the next two decades, it stayed in force until agricultural decollectivization. The most important aspect of the document was the principle of “ownership by the three levels and the team as the base” (*san ji suoyou dui wei jichu*), meaning that although all three levels of the collective had ownership rights over collective property, the production team was the basic unit of ownership, accounting, and income distribution. The document stressed the stability of the team as the accounting unit by requiring that “once established this system shall remain unchanged for at least thirty years” (CCP Central Committee, [1962] 1980, p. 137).

Table 4. Sources of Household Income in Rural China Based on Sample Survey Data (% of Total Household Income)

	1957	1978	1979	1980	1981	1982
Income from the collective	59.49	66.28	63.66	56.64	52	51.87
Household sidelines	29.42	26.79	27.47	32.69	37.83	38.06
Other non-borrowing incomes	11.09	6.93	8.87	10.67	10.17	10.07

Source. State Statistical Bureau, 1983, p. 499.

Note: "Other non-borrowing incomes refer to money both in cash and in kind (converted into money) sent or brought back by persons working outside and allowances for living expenses, subsidies for persons working on public projects and for disabled army men from the state, and others excluding borrowing and credit" (State Statistical Bureau, 1983, p. 499).

The team had its own property including land, farm tools, and buildings. Teams were responsible for all basic farming activities and therefore both owned and used available farmland. Although the Sixty Points document allowed the teams to allocate up to 15% of their land to households as private plots, it strongly recommended keeping this ratio between 5% and 7% (CCP Central Committee, [1962] 1980, pp. 148-149). Despite regional variations, the great majority of the production teams followed this recommendation.²² In accordance with the changes in the size of households, production teams made periodic minor and major reallocations of the private plots among their member households, usually in every three and six years, respectively (Potter & Potter, 1990, pp. 110-111). Private plots were not subject to taxation or delivery quotas set by the state and the households were granted the right to market their private products in the open markets (CCP Central Committee, [1962] 1980, pp. 149-150). Private plots enabled the

²² There were many collectives that allocated a larger portion of their farmland to member households. For instance, the ratio of the private plots was 10% in the Zengbu brigade of Guangdong (Potter & Potter, 1990, p. 109) and 9.5% in Sichuan province as a whole in the late 1970s. In the Qidong commune in Jiangsu, in order to prevent excessive land allocation to households, a land survey was conducted in 1975. The survey found that one of production teams allocated 15.16% of its total arable land to member households. Interestingly, after the survey, instead of taking the land back the team leader asked the households to give the team 80 catties of grain for every 0.1 mu of extra plot they used and the households did not object to this arrangement (Li, 2009, p. 164). The total size of private plots increased by 23.3% and reached 7.1% of the total cultivated land in China as a whole in 1980 (Zweig, 1989, pp. 179-180).

households to grow their own vegetables and earn extra income. Since the collectives distributed their incomes among their members only once or twice a year, the existence of private plots made a limited amount of cash available to households throughout the year (Zweig, 1989, p. 133). Households used their private plots for crop production as well as animal husbandry. In 1980, private plots produced 5.5% of the total grain out (Lu, 1992, p. 109). Since the party-state leaders recognized the advantages of household farming in vegetable and fruit production, they provided the households more scope for producing these products. More importantly, although private animal husbandry was attacked during the Great Leap Forward and the most radical phases of the Cultural Revolution, households retained the right to raise a limited number of chickens, ducks, and pigs in their household plots and courtyards during much of the collective era. As Table 4 shows, household sidelines provided more than a quarter of household income in rural China during the collective era.²³

Teams cultivated the great majority (93% to 95%) of China's farmland. These lands were subject to taxation and quota deliveries. Production teams had the right to develop different types of sideline activities and small industries (CCP Central Committee, [1962] 1980, pp. 140) but communes and brigades organized most of the non-farm activities. Each team was required to allocate 2-3% of its total annual income to its public welfare fund. Teams also had to allocate 3-5% of their total income to their public accumulation funds. While the former covered the expenses of education and healthcare services and the subsidies to the poor, the latter provided the financial basis to develop rural infrastructure

²³ This ratio reached more than a third of household income in many regions. For example, in very advanced collectives close to Nanjing, more than 35% of household income was derived from private plots (Zweig, 1989, pp. 132-133). In a brigade of Shifang county of Sichuan, the share of private income in total household income was about 40% (Endicott, 1988, p. 125).

and acquire necessary farm and industrial technology. Moreover, in order to prevent the occurrence of a famine like the one happened during the Great Leap Forward and more importantly, to prepare for a future war during which grain delivery between regions might be very difficult, each team was responsible to maintain a grain reserve comprising about 1% of the remaining grain after the compulsory delivery to the state.

Team's function as basic accounting units referred to two related responsibilities. First, they were solely responsible for their profits and losses. Second, after making these compulsory deductions from their total output and income, teams had the right to distribute their net annual profit among its members according to their labor contributions (CCP Central Committee, [1962] 1980, pp. 137-146). Labor contribution of the team members was quantified according to the work-point system (*gongfen zhi*). Work-points were determined by using two main methods. The first method was known as the *piece-rate system* in which the completion of specific tasks (such as sowing, harvesting, and removing earth in infrastructure projects) was rewarded by a pre-determined number of work-points. The second was the *time-rate system* in which the daily labor value of each worker was set according to her/his physical power, skill, and work motivation. After 1964, the Maoist leadership promoted the Dazhai brigade in Shanxi province as a model for all rural collectives. In this brigade, work-points were determined based on each collective member's self-evaluation as well as other collective members' evaluation of her/his performance in which not only labor productivity but also the political attitudes was considered. Hence, taking politics into account in work-point allocation came to be known as the "Dazhai-type work-point system" (Li, 2009, p. 186; Potter & Potter, 1990, p. 117). Although the Dazhai system was enthusiastically promoted for a few years during the

Cultural Revolution, piece-rate and time-rate systems remained dominant methods of labor remuneration during much of the collective era. The comparative efficiency of the piece- and time-rate systems was debated continuously. Similar to the observations in the modern industrial sector, piece-rate system was clearly helpful to complete a large number of tasks in a given amount of time. However, it did not guarantee the quality of work. On the other hand, time-rate system reduced the work stress and helped the workers to adjust their pace according to the pace of others. It was found to be a good remuneration method for certain tasks like weeding. However, it clearly involved greater risk of slacking than the piece-rate system. Overall, the quality of team leaders (in areas of work assignment, supervision, motivation, and rewarding) and the strength of the relationship between team members (mutual competition, supervision, and trust) proved to be more important than the type of work-point system chosen (Li, 2009, pp. 109-110).

At this point, we should also point out to gender-based inequalities in labor remuneration. As we will examine below, the participation of women into productive activities dramatically increased after collectivization, which improved women's position in the rural society to a significant extent. On the other hand, with the brief exception of the Great Leap Forward during which the collectives (prematurely) attempted to socialize the activities related to the reproduction of labor power by establishing dining halls and crèches, reproductive activities were put back again to women's shoulders after the end of the GLF. This meant that women would be able to earn less work-points than men because they had to do household work. Also, the close association between physical power and the work-point value led to the remuneration of female labor less than male labor throughout the collective period. The Sixty Points document admitted the existence of these

inequalities: “When the basic number of man-days is fixed for women members, their *physical conditions and household chores* should be taken into consideration” (CCP Central Committee, [1962] 1980, p. 142, emphasis mine). Although regional variations existed, adult males and females generally received about 10 and 7 work-points, respectively, for the completion of similar tasks (Croll, 1985, p. 39; Li, 2009, p. 189).

On the other hand, living standards of the team members did not entirely depend on their work-points. Although the villagers did not have access to “iron rice bowl” in urban areas in which workers benefited from comprehensive social security and services, a less comprehensive and lower quality but still strong “iron rice bowl” existed in the countryside. The state obligated each production team to provide a safety net to its members. “The aged, the weak, the widow or widower, or the disabled” were entitled to subsidies “paid out of the public welfare fund” of the collectives (CCP Central Committee, [1962] 1980, pp. 146). These subsidies were popularly known as the “five guarantees” including food, clothing, housing, medical care, and funeral (Bhalla, 1992, p. 243; Endicott, 1988, pp. 123-124; Li, 2009, p. 250; Lu, 1992, p. 123-124; Robinson, 1975, p. 8).

In stark contrast to its precedents, the PRC regime accomplished to penetrate into the villages. One of the basic institutional vehicles of this penetration was the management committee of the team, which comprised the leader, the accountant, and a few other members. The transition from household-based economy into a collective economy made leadership a much more important factor than before. Since the team was responsible for agricultural production, the quality of the team leader was immensely important. The CCP Central Committee described the ideal team leader as “a peasant who has a good origin,

labors well, is rich in experience in farm production, knows to consult with the masses, and is fair-minded in handling matters” (CCP Central Committee, [1962] 1980, p. 147, also see Chan et al., 2009, p. 34). This committee, especially the team leader fulfilled a wide array of administrative and economic tasks including the planning and management of production, keeping the team accounts, paying tax to the state, distribution of income to the members, organization of social services like education and healthcare, and arbitration of the conflicts between the households (CCP Central Committee, [1962] 1980, pp. 139-148; Lu, 1992, p. 182).

Team members had the right to elect the team leader through the secret ballot box. On the other hand, there was not much competition for team leadership position for two main reasons. First, team cadres did not receive any salary or material benefits from the state in return to their administrative services. They were receiving work-points in return to their administrative services but the value of the work-points were deliberately kept at a low level by the state in order to prevent the emergence of a privileged bureaucratic elite in the villages.²⁴ Given the fact that in contrast to their fellow team members, team leaders could not find enough time to work in their household plots or earn many work-points through agricultural labor, their income level was usually not higher than average member income. Second, since the team leaders were responsible for the delivery quotas and tax payments, in the eyes of their fellow villagers, they appeared as the most visible representatives of a highly extracting state. As they lacked a similar degree of power

²⁴ According to the 60 Points document, “in order to insure that the team level cadres’ income is not affected by their duties, they should be given subsidies or compensatory subsidy, the amount to be determined through the discussion by commune members as their respective work load may dictate. The amount of such subsidy for a team level cadre, in general, *should be controlled within 1 percent of the team’s total work-points*” (CCP Central Committee, [1962] 1980, pp. 154, emphasis mine).

enjoyed by the brigade, commune, and county leaders, team leaders were more approachable and less shielded from the criticism of the villagers. Villagers often criticized the leaders for the policies that they did not have much control over. Team leaders were also often criticized for earning undeserved work-points without considering the fact that they had heavy administrative responsibilities that prevented them to engage fully in income generating activities. As a result, team leaders lived under constant pressure and stress (Chan et al., 2009, p. 69; Li, 2009, pp. 171-174; Lu, 1992, p. 186). Team leadership was therefore not a desirable position up until the end of the Cultural Revolution in 1976. After 1976, the sanctions forcing the team leaders to participate into manual labor decreased and the work-point allocations for administrative tasks increased. Team leadership therefore turned into a relatively privileged position (Li, 2009, pp. 173-174). Team cadres' lack of significant material privileges helps us to explain why team leadership remained a highly stable position throughout the collective era despite several political campaigns between 1964 and 1976 during which the higher state authorities encouraged the ordinary team members to criticize and attack their leaders.

Brigade

Production brigade (*shengchan dadui*), or simply, the brigade (*dadui*), constituted the medium level of the collective organization. As Table 3 demonstrates, on average seven or eight teams were organized into a brigade. The brigade was a unit that was compatible to the administrative village of the prerevolutionary period. Administrative villages were responsible for the governance of several natural villages. On the other hand, in many cases the brigade itself was a single large natural village (Ho, 2003, p. 103; Lu, 1992, p. 178; Shen, 2009, p. 9). In regions such as Fujian and Guangdong that had strong lineage

institutions, a strong compatibility existed between the lineages and the brigades.²⁵ Hence, similar to the team, as an administrative unit the brigade did not born into a vacuum and certainly had strong roots in the past. Being the lowest level of the organization of the CCP, each brigade had a party branch (CCP Central Committee, [1962] 1980, p. 156). All brigades had an administrative and control committee. Similar to the team, every brigade had a leader (the brigade party secretary) assisted by a deputy-leader and an accountant. They were all elected by the brigade members' congress. In its quest to reduce the gap between the mental and manual labor, the Chinese party-state required the brigade leaders to participate into farm labor for at least 120 days a year (CCP Central Committee, [1962] 1980, p. 136). Although variations certainly existed in terms of the degree of participation into manual labor, brigade cadres had to do manual labor simply because administrative services were not rewarded with a high number of work-points until the end of the Cultural Revolution.

Brigade administration had a wide variety of administrative and economic responsibilities among which three of them were especially important. Their first responsibility was to mediate between the commune and the teams. Brigade cadres had to regularly inform the team cadres about the instructions and demands of the commune administration. They also had to “supervise the productive work, fiscal management and distribution work of the production teams, and help the production teams improve their

²⁵ “The lineage had survived the radical revolutionary changes of land reform and collectivization with its core structure – a group of co-resident, property-owning kinsmen, related through the male line-intact...During the three-level (team, brigade, and commune) system...The outlines of the newly established brigades tended to replicate the outlines of former traditional lineages” (Potter & Potter, 1990, p. 256). “Our sample of villages suggests that under socialism, production brigade (i.e., village) leaderships are considerably weaker in localities where, traditionally, village-level organization and cohesion were weaker: for example, in villages where loyalties used to be centered more on the various lineage branches (or different lineages) within the village” (Chan et al., 2009, p. 18).

management.” The most crucial part of the supervision was to “urge the production teams within the brigade to fulfill the state targets for requisition and procurement of grain” and other products (CCP Central Committee, [1962] 1980, pp. 136-137). The second responsibility of the brigades was to organize the infrastructure projects (CCP Central Committee, [1962] 1980, p. 137; Chan et al., 2009, p. 36; Potter & Potter, 1990, p. 80; Rawski, 1979, p. 282).

As shown in Table 3, an average Chinese brigade had more than a thousand members. This provided a sufficiently large pool to provide labor and capital for small and medium-scale infrastructure projects. As we will see below, several brigades worked together under the supervision of the commune administrations in large-scale projects. Finally, as the name “Commune and Brigade Enterprises” indicates, one of the primary tasks of the brigades was industrializing the countryside. As I will examine in the section on rural industrialization, brigades tapped the labor and financial resources of their constituent teams to establish industrial enterprises. The income of these enterprises was accounted separately. Similar to team income, a part of the profits was retained in the brigades’ welfare and accumulation funds. While most of the rural junior middle schools and clinics were established at the brigade level based on their welfare funds, accumulation funds provided a crucial source for rural industrialization (CCP Central Committee, [1962] 1980, p. 137; Rawski, 1979, p. 77; Zweig, 1989, p. 29). Since brigades had these important powers and responsibilities, the quality of the brigade leadership was an important factor behind the variation of the economic performance of different rural regions (Zweig, 1989, p. 105).

Commune

Commune (*gongshe*) constituted the highest level and largest unit of administrative and production organization in the collective system. As Table 3 demonstrates, on average about 10 brigades made up a commune. Hence, it was a truly giant organization. Commune was a unit compatible with the township (*xiang*) unit of the prerevolutionary period and thereby represented a certain degree of continuity with the past. Similar to brigades, communes did not have a constituency separate from the team members. All rural residents were commune members. Each commune had a party branch and an administrative committee. The leader of the commune was also the chief of the township and was responsible for all administrative and economic activities within its borders (CCP Central Committee, [1962] 1980, pp. 130-131). As mentioned above, some of the members of the commune administrative committee were professional cadres on government payroll. They were appointed by and directly responsible to the county governments.

Communes had three main functions/responsibilities. First, they mediated between higher state authorities (i.e., the county administrations) and the villagers as a whole. They were responsible for informing the rural population about the central government's administrative and economic targets and demands and make sure that they were met successfully. As the Sixty Points document explained, "the commune may not violate and change the established policies and decrees of the center. It should supervise the production brigades and production teams at all times to insure that the policies and decrees are conscientiously carried out. It should check up the ways the brigades and teams have carried them out." Given the centrality of food supply in China's economic strategy, delivery of the crop quotas occupied a large part of the supervisory activities of the

communes.²⁶ The second major responsibility of the commune administration was carrying out large-scale infrastructure projects that were beyond the capacity of individual brigades. Their task was to mobilize the labor and financial resources of the brigades and teams to implement such projects. Since large-scale projects absorbed a large number of workers, the commune administration was responsible to plan and execute them in a way that did not affect agricultural production negatively. On top of that, as we will see below, many of the large projects involved several communes, making the challenge even greater. They were also obligated to oversee the maintenance of the constructed facilities.²⁷

Finally, along with the brigades, communes were responsible for developing rural industry. Although the CCP Central Committee put strict limits to their industrial activities in the aftermath of the collapse of the Great Leap Forward (CCP Central Committee, [1962] 1980, p. 134; Yan, 2007, 63; Zhan, 2013, pp. 150-151; Zhang & Zhang, 2001, pp. 37-38), as we will examine below, communes actively promoted rural industrialization from the mid-1960s onwards. Based on their control of large areas and populations and ability to receive technical and (limited) financial assistance from the industrial enterprises run by the county governments, communes provided the financial resources and technical know-how that were required to establish and operate small and medium-sized modern factories.

²⁶ “The commune administrative committee should, according to the State targets for requisition and procurement of grain and other agricultural by-products, proceed with rational distribution of quotas among the production teams and urge the production teams to fulfill the state targets” (CCP Central Committee, [1962] 1980, p. 133, 135).

²⁷ The Central Committee document stressed the complexity of these tasks: “Bearing in mind the production requirement and available manpower and material and financial resources...the commune administrative committee may, with the approval of the higher body, build capital construction projects like water conservation, afforestation, water and soil conservancy, and soil improvement for the whole commune or for several production brigades and production teams and build water conservancy projects or other capital construction projects for several communes provided such projects do not hinder the growth of production for the current year and do not hinder the growth of commune members’ income for the current year...The commune administrative committee should assume responsibility for the management and maintenance of the water conservation projects and other farm capital construction projects collectively owned by the commune” (CCP Central Committee, [1962] 1980, pp. 132-133).

Similar to teams and brigades, the profits of the commune enterprises were accounted separately and used to establish public welfare and accumulation funds. While the former was used for running senior middle schools and hospitals located at the commune town, the latter was reinvested for expanded industrial production.

The Process of Rural Collectivization (1952-1956)

Although land reform of 1947-52 decreased income inequality among the villagers significantly, it did not change the prerevolutionary production organization based on small peasant households. The party-state leadership was not satisfied with this production organization because it posed a formidable barrier to its goal to develop rural infrastructure, establish large-scale mechanized agriculture, and transfer the agricultural surplus to the industrial sector. According to the Maoist leadership, transition from small-scale, household-based farming and handicraft production to large-scale, collective forms of production would enable the state to gain a high degree of control over land, labor, and markets and thereby pave the way for agricultural modernization and industrialization of the cities and the countryside. Apart from this economic rationale, collectivization of the rural economy was also viewed as useful to rule out the development of capitalist production relations in the countryside and thereby eliminate a potential challenge to the socialist regime (see Appendix A). As a result of this conviction, immediately after the completion of the land reform campaign in 1952, the central government started to push for the transition to collective forms of production in the countryside. As Table 5 demonstrates, the full-fledged development of small peasant production in the PRC did not last more than two years (1950 and 1951). Starting with 1952, rural China's economic

organization started to undergo profound transformations that amounted to a radical break from the past.

Table 5. The Transition to Collective Farming (% of Total Rural Households)

Year	Family farming	Mutual Aid Teams			Agricultural Cooperatives		
		Total	Seasonal	Annual	Total	Elementary	Advanced
1952	60.0	39.9	29.8	10.1	0.1	0.1	0
1953	60.5	39.3	27.8	11.5	0.2	0.2	0
1954	39.7	58.3	32.2	26.2	2.0	2.0	0
1955	35.1	50.7	23.1	27.6	14.2	14.2	0
1956	3.7	0	0	0	96.3	8.5	87.8
1957	2.0	0	0	0	98.0	2.0	96.0

Source. Chen & Buckwell, 1991, p. 36.

The collectivization of the rural economy proceeded in three subsequent organizational stages and completed within only five years (1952-56). The earliest stage started with the establishment of agricultural Mutual Aid Teams (MATs, *nongye shengchan huzhuzu*, or simply, *huzhuzu*) in 1952. The institution of mutual aid had a long history in rural China. In the prerevolutionary rural society, labor exchange among households was not uncommon. However, cooperation between households was very limited in terms of scale and scope. A few households related by kinship cooperated with each other and this cooperation generally took place only during the harvest time when labor demand peaked. MATs were built on that tradition but went beyond it. Similar to the prerevolutionary rural society, private landownership remained unchanged at the stage of the MATs. Several peasant households pooled their land, labor, farm tools, and other types of capital in the MATs and cultivated land collectively. Most households retained a small part of land outside the teams, under their exclusive control. On the other hand, although the degree of cooperation within them was much less developed than the organizations that

later on replaced it, the MATs represented an important advance over the prerevolutionary forms of cooperation. They usually combined 10 households (Zhang, 2005, p. 52; Li, 2009, p. 24) and therefore represented a certain increase in the scale of cooperation. As Table 5 demonstrates, although the major part of labor cooperation remained seasonal, yearlong cooperation under these organizations became more widespread in 1954 and 1955.

Similar to the rapid transition from purely household farming to the MATs, the latter was also quickly replaced by a higher form of peasant cooperation called the Agricultural Producers' Cooperatives (the APCs, *nongye shengchan hezuoshe*). Two main forms of APCs emerged subsequently between 1955 and 1957. The earliest form was called the elementary APC (*chuji nongye hezuoshe*) and the final form was named the advanced APC (*gaoji nongye hezuoshe*) or, in more common parlance, the *rural collective* (*nongcun jiti*). Elementary APCs usually comprised 20 to 25 households and hence represented a significantly larger scale of cooperative production than the MATs. More importantly, although private landownership was retained, land use rights were transferred to the cooperative. As the cooperative gained a high degree of control over land use, it organized the production process on a year-round basis rather than seasonal cooperation. As the scale and scope of cooperation increased, modern accounting methods started to be used by the teams. Team members shared the total income according to two criteria. About 30-40% of the income was shared according to each household's contribution of land and capital. Although the land reform decreased the variations among different households' lands in terms of size and quality, since complete egalitarianism was avoided and middle and rich peasant property was not confiscated entirely, households owned land of different size and quality. Hence, the members of the elementary APCs negotiated the value of their specific

property contribution with other members and shared 30-40% of the cooperative income based on this criterion. This reflected the weight of the private/non-collective element in the elementary APCs. However, since the labor input became the major criterion determining 60-70% of income distribution, the transition to the elementary APCs represented a radical break from the traditional production organization in rural China.

It is appropriate to characterize the four years between 1952 and 1955 as the initial stage of rural collectivization. On the other hand, the transition to the advanced (or “socialist”) APCs in 1956 manifested the full-scale collectivization of the rural economy. With this transition, private landownership was abolished and both ownership and use rights over land were transferred to the APCs. Although the structure and rules of the rural collectives were clarified in the Sixty Points document of 1962, most of the content of that document (such as the composition and responsibilities of the production teams and brigades, criteria of labor remuneration, household plots, etc.) was put into practice by 1956. Besides the complete establishment of collective farming, most non-farm activities were also collectivized. The process of amalgamation and cooperativization of the previously household-based handicraft production started as early as the transition to mutual aid teams. Between 1956 and 1958, they were put entirely under collective ownership and management (Yan, 2007, p. 61). Although at the beginning of the collectivization campaign Mao Zedong suggested to avoid using the term “collective” to describe the advanced APCs²⁸ and as a result their official name did not change until 1958, the term “rural collective” quickly gained currency to describe rural China’s new

²⁸ In a speech on 4 November 1953, Mao stated: “We are taking steady steps, moving first from mutual-aid teams which contain rudiments of socialism to semi-socialist and later to fully socialist cooperatives (which we still call agricultural producers’ cooperatives, not collective farms)” (Mao, [1953] 2004).

organizational framework. The party-state's completion of the collectivization process in the vast countryside of China very rapidly and without any serious resistance from the rural population was a significant historical success.²⁹

The Four Cleanups and the Cultural Revolution (1965-1976)

I will examine the Great Leap Forward catastrophe (1959-62) later on, in the section on the weaknesses of the collective system. As soon as the rural economy recovered in 1965, Mao and his allies started to revive the radical mobilizational politics. The Four Cleanups (*siqing*) campaign (also known as the “Socialist Education Movement”) between 1964 and 1966 was the first step to do that. The party center declared the goal of the campaign as fighting against the tendency of capitalism in the countryside (Selden, 1979, p. 536). By following the tradition of the earlier campaigns of the CCP in which the

²⁹ During the transition from the (mostly household-based) private economy to the collective economy, peasants used different methods of resistance against state policies in many regions of China. However, this resistance was radically different from the anti-collectivization resistance in the Soviet Union between 1929 and 1931 in six important respects. First, in contrast to the Communist Party of the Soviet Union, the Chinese Communist Party was a primarily peasant-based party. Although most of its mass base within the peasantry was concentrated in North China in the aftermath of the Long March in 1934-35, the CCP managed to maintain guerilla units in regions as far as Guangdong until 1949. These units maintained some contact with the local peasantries. More importantly, the work teams dispatched by the party to carry out land reform in the south between 1950 and 1952 were fairly successful in gaining the sympathy and support of the peasantry to the party. As a result of this growing relationship of trust, when the party started the collectivization campaign, most peasants thought that it was a sensible policy since the party would not do anything against their interests. Second, since the land reform did not eliminate rural poverty to any significant extent, a large part of the peasantry was open to trying new methods to improve their economic position. Third, in contrast to the Soviet Union where collectivization started more than a decade after the land reform, CCP chose to “hammer the iron while it is hot” (*chen re da tie*), i.e., start collectivization immediately after land reform in order to prevent the entrenchment of the private economic interests in the countryside. Fourth, in relation to the previous points, most of the resistance activities of the peasants aimed to reduce the degree of state extraction and expand the space of the private economy to a limited extent and *without* objecting to collectivization as a whole. Fifth, these limited goals did not require the peasantry to resort to rebellion or other forms of open resistance against collectivization. Finally, during the collectivization process the Chinese state refrained from labeling the peasant resistance against heavy state extraction as counterrevolutionary activity and remained open to negotiation with the peasants. For instance, the adoption of the “three fixed” policy in March 1955 was a direct result of the state's careful handling of the peasant resistance against heavy extraction. Due to these reasons, the party-state completed the collectivization campaign in the vast countryside quickly and without facing any significant resistance from the rural population (Nolan, 1976; Li, 2006, 2009, pp. 24-80; Potter & Potter, 1990; Zhang, 2005).

rectification (or re-disciplining) of the party cadres and the mobilization of the masses for certain political and economic goals were carried out simultaneously (Selden, 1995), this campaign also aimed to “cleanse” the party-state ranks in four areas (politics, economics, organization, and thinking) while using mass mobilization as a means to both rectifying the local cadres and developing rural infrastructure. The term “four cleanups” referred to the cleansing of work-point records, accounts, property, and inventory of the collectives (Li, 2009, p. 108).

The party center sent work teams composed largely of county and township party members (including both educated youth and senior cadres) to every single brigade in rural China. In almost all cases, work teams stayed in their locality for several months. In this sense, the Four Cleanups campaign was the second time (after the land reform) during which the party-state interacted with the peasantry directly *without* involving the local cadres. Although ordinary villagers were hesitant to testify against the cadres mainly due to their fear of retaliation from the cadres after the work teams’ departure, work teams managed to convince them to testify. Cadres who were testified against were forced to confess their misdeeds in self-criticism meetings and formal interrogations. The entire process revealed four types of wrongdoings of the rural cadres all over the country: a. “excessive eating and taking,” b. “overdrawing and misappropriation,” c. “speculation and profiteering,” and d. “embezzlement and theft.” The latter two were serious crimes and most cadres were *not* found guilty of them. On the other hand, the first two abuses were found to be common. Since cadres did not receive salaries from the state and did not have much time to do farm work due to their administrative responsibilities, they often inflated their own work-points of themselves and those of their family members. All cadres who

were found guilty of any of these crimes were forced to pay (what they took before) back to their collectives. The campaign was a significant success in this sense (Chan et al., 2009, pp. 37-73; Li, 2009, pp. 108-110; Lu, 1992, p. 186; Zhang, 2005, pp. 123-156).

On the other hand, the great majority of the rural cadres did not lose their seats after the campaign. Work teams carefully exonerated the majority of the cadres by announcing that they were essentially reliable people whose conduct was expected to improve thanks to previous rectification efforts. This was a rational decision given the fact that rural China had a severe deficit in human capital and improving the behavior and skills of the existing cadres was easier than replacing them with new cadres. Moreover, work teams throughout the country found that many of the problems regarding the team and brigade accounts were related to the low educational level and managerial skills of the cadres rather than their deliberate corruption (Chan et al., 2009, pp. 49-50). It appeared clear that solving the existing problems required significant improvements in the level of literacy and basic math skills of the cadres as much as their moral and political reeducation. Mass education was also necessary in order to spread the practice of the “democratic management of finance” (*minzhu licai*) (Li, 2009, pp. 128-130). As we will see in the section on human capital, in addition to political practices like open books and mass supervision, literacy and math education and better methods of accounting were also promoted from the Four Cleanups campaign until the end of the Cultural Revolution.

The Cultural Revolution (CR) constituted the most important and longest sub-period (1966-1976) of the collective era. In May-June 1966, Mao Zedong launched the CR as a direct attack against the groups inside the CCP that they blamed as “capitalist roaders.” The Cultural Revolution was a highly chaotic and complex episode that still requires deeper

investigation and analysis. In this brief section, I will restrict myself to summarizing its general content and impact on the rural economy. It is possible to investigate the CR in two broad areas. The first is politics in the narrow sense of the term. It included the political struggles waged inside and outside the party.³⁰ The second area of the CR was socio-economic transformation. One of the central themes of the Maoist politics of the era was to eliminate the “three differences,” i.e., the differences between the mental and manual labor, city and the countryside, and worker and peasant (Andreas, 2009, p. 43). Although the Cultural Revolution failed to eliminate these differences, policies that were implemented to achieve this ambitious goal led to serious long-term socio-economic changes everywhere but especially in the countryside.

In order to analyze the impact of the Cultural Revolution in the countryside, we should first underscore the fact that rural regions were not affected by the political turmoil

³⁰ Rather than operating through the regular organizational channels of the party-state, Maoists appealed directly to the masses to carry out the CR. During the most radical phase of the CR (1966-68), they purged many people (including the two most prominent party-state leaders after Mao and Lin Biao, Liu Shaoqi and Deng Xiaoping) from the party with the support of the mobilized masses. Innumerable small and large groups and factions were formed during this episode and fought against each other by claiming to represent the most correct understanding of the Maoist ideology. Secondary school and university students were especially active in these fights that led to the death of thousands of people. Workers organized strikes and demonstrations in the big cities that challenged the authority of the local officials and factory managers. Most urban schools were closed for up to two years. Many urban workplaces remained closed (or did not work full-time/capacity) for several months. In 1967, Mao started to fear that mass mobilizations that he called for developed to an increasingly uncontrollable direction. They called all mass organizations to stop fighting each other, return back to their work units and schools, and ordered the PLA to suppress all the elements rejecting demobilization. As a result, the most intense and chaotic episode of the Cultural Revolution ended in 1968. For this reason, some scholars view 1968-69 as the end of the Cultural Revolution. Although I agree that the most radical episode of the revolution ended by that time, since the socio-economic transformations in rural China that were related to the original goals of the Cultural Revolution continued up until the death of Mao in 1976, this study accepts the common periodization of the CR as the decade between 1966 and 1976. Although a series of important political events (such as the death of Lin Biao, who was the commander in chief of the PLA and designated heir of Mao after the CCP's 9th Congress in 1969, the return of Deng Xiaoping to the party leadership ranks in 1974 and his second purge in 1976) and campaigns (such as the “Criticize Lin and Confucius” campaign between 1973 and 1976 and the “Criticize Deng Xiaoping” campaign in 1976) took place in the following years, both economy and politics remained much more stable compared to the 1966-68 episode. On the trajectory of the Cultural Revolution in urban China see Andreas, 2009; Wu, 2014. On rural China during the Cultural Revolution see Gao, 1999; Han, 2008; Zweig, 1989.

between 1966 and 1968 as much as the cities. In contrast to the urban workers who received fixed wages from the state regardless of the short-term fluctuations of production, there was a direct link between the income (and even the physical survival) of the peasants and the short-term fluctuations in the production of the rural collectives. Hence, while the urban workers and the youth had the luxury of stopping production and engaging in factional struggles while continuing to receive monthly paychecks from the state, members of the rural collectives lacked such luxuries and therefore had to keep their focus on economic production. For this reason, collective members did not tolerate much the potentially disruptive activities of the youth (Meisner, 1977, p. 171).³¹ Most of the political campaigns that were organized along the official party and state channels did not go far beyond the content of the Four Cleanups campaign. Cadres were criticized, “feudal superstitions” were attacked, Mao’s writings were studied, etc. However, most of these activities were organized in the evenings after work and were intensified in the agricultural slack seasons (Huang, 1990, p. 278). Second, the existence of a limited number of capable leaders in the countryside saved these leaders from serious challenges.³² For these reasons, although their

³¹ As a young rebel in the Magaoqiao village of Shifang county of Sichuan recalls, “In the cities and factories...the debates were more dynamic and the struggle went on much longer because the urban rebels continued to receive their wages whether they worked or not. But in the countryside where the state was not the paymaster the production team and brigade activities were the only sources of income...For example, in the Chemical Fertilizer Machinery Factory over there, they stopped production for a year to engage in the violent movement, and the workers still got their wages from the bank. But for us things were different, we got no wages from the state. So here only a few of us went to make revolution and we came back and tried to make the production team give us work-points. This made the commune members angry. The older generation wouldn’t stand for this. Therefore the Cultural Revolution did not affect production much in the countryside. People had to work to eat. We had to be spare-time revolutionaries” (Endicott, 1988, pp. 117-118).

³² The unsuccessful attempt of the Maoism Red Guards, a youth rebel group, to seize power in Chen Village in Guangdong helps us to understand the sources of stability in the countryside during the Cultural Revolution. A member of the rebel group recalls: “We suddenly broke in, and Overseas Deng said: ‘We have come to seize power!’ The brigade secretarial clerk said: ‘If you want it, then here it is!’ He brought out the brigade’s official seal [which was used to validate all official correspondence] and said, ‘Well, who wants to take it?’ But none of us dared to. It came as a surprise. Actually we’d no real idea of what it meant to seize power. Suddenly it occurred to us that if we took the seal, the next morning when people came to ask for this and that we’d have to decide whether to give the stamp of approval. We’d also have to take the lead in

material privileges were suppressed dramatically by the egalitarian policies of the Four Cleanups campaign and the Cultural Revolution, local leadership remained fairly stable in the countryside in this period. Finally, the party-state leadership took a clear lesson from the Great Leap Forward that any action that potentially destabilizes agricultural production would end with a disastrous failure. For this reason, even during the most radical phases of the Cultural Revolution, the state did not repeat the mistakes of the Great Leap.³³

Collective Mobilization and Agricultural Development

As we have seen, the most important rationale of the Chinese leadership for collectivizing the rural economy was to acquire the capacity to raise a substantial portion of the cost of rural capital construction (i.e., the development of rural infrastructure) from the rural population. Self-financing of capital construction was the most important contribution of the collective system to China's rural development. Rural collectives contributed to capital construction in two ways. First, they mobilized a significant portion of their members to work in infrastructure projects for a substantial amount of time each year. Most of the mobilized rural labor was unpaid. Construction works were usually scheduled in agricultural slack seasons during which large quantities of surplus labor were available and therefore (except for the Great Leap Forward) mobilization did not impact agricultural production negatively. The central government and local governments did not pay wages to the villagers working in construction projects during agricultural slack

planning production. But we'd have no real idea how to do any of it. We were inexperienced. So the seizure of power ended in nothing. No one dared to take that official seal" (Chan et al., 2009, p. 121).

³³ "The Cultural Revolution managed to avoid the worst economic excesses of the Leap, while achieving major advances in crop yields, sidelines, and industry. This is not to deny the great human toll that the Cultural Revolution took in its indiscriminate attacks on innocent victims, especially in the cities. It is only to point out that the political radicalism of the Cultural Revolution was not accompanied by extremist economic policies in the countryside. The 'Maoists' seem actually to have learned some lessons from the failures of the Great Leap" (Huang, 1990, p. 279).

seasons. On the other hand, large construction projects required labor supply for a long time including the active farming seasons. Their gestation period was long and therefore did not immediately benefit the regions supplying labor. This required the state to pay subsidies to the collectives for the sake of covering their potential losses due to labor transfer and preventing a fall in their members' living standards. Nevertheless, these subsidies did not amount to a full wage and covered only a part of the actual labor costs. In other words, the state managed to get the collectives to assume part of the labor costs even in large projects, which internalized them through low-cost mass mobilization.

There were two main sources of unpaid labor in the collective system. The first is known as "obligatory labor" (*yiwu gong*). The Chinese state required all collective members to allocate about 3% of their total workdays to capital construction projects without seeking to receive any sort of payment. This was unpaid labor in both the legal and actual sense of the term. On the other hand, the actual scope of labor mobilization under the collective system was far greater than 3% of the villagers' workdays. Collectives allocated work-points to pay the labor of their members in excess of the 3% limit. Construction work was also remunerated with work-points like all other types of collective work. Hence, all construction labor in excess of the 3% of total workdays was not unpaid labor in the *formal-legal* sense of the term.³⁴ However, in reality this was still unpaid labor

³⁴ As the point 35 of the Sixty Points document stated: "The production team's investment in capital construction and in expanding reproduction may be defrayed from the public accumulation fund. What is expended for capital construction and for production should be accounted for separately. Each and every commune member with labor power should perform a definite amount of productive capital construction work each year, as fixed by a general meeting of commune members, as a labor contribution to the collective economy. Such capital construction work in general should be restricted within approximately 3 per cent of the basic man-days performed by each commune member during the whole year, and any number of man-days spent on such work over and above the fixed standard should be paid for out of the public accumulation funds. Work on repairing irrigation ditches or embankments or any other type of water conservation work on a small scale or work done on soil improvement must be given work-points in the same way as that for

because the income from the collectives did not have any source other than their total agricultural and industrial output by the end of the year. Given the fact that constructed infrastructures have gestation periods and do not increase the total output in the year of their construction, no matter whether or not the villagers worked in construction, the total monetary value of the collective income distributed among them was fixed. Allocation of work-points for construction works only increased the number of total work-points and automatically decreased the value of each work-point. Since villagers produced the total output from which a part was used for paying their labor in construction works, in reality villagers were paying themselves. Moreover, since collective members always wished to increase their portion within total collective income by earning more work-points, using the work-point system to remunerate construction work was a smart strategy from the point of view of the state because it increased the villagers' incentives to participate these projects for increasing their portion within the fixed collective income. In short, the labor power spent in construction works and remunerated by work-points was paid labor only in the *formal-legal* sense of the term but in *reality* it was unpaid labor.³⁵

The second way in which collectives contributed to rural capital construction was through the mobilization of the financial resources of their members. As we have already examined, the public accumulation funds of the collectives were established for this purpose. These funds covered both the labor and capital costs of the small and medium-scale infrastructure projects that were directly organized by the communes and brigades. Depending on the importance of each specific project, the state sometimes provided limited

production and may be credited as work-points for the year's income distribution" (CCP Central Committee, [1962] 1980, pp. 145-146).

³⁵ On this point also see Wakashiro, 1990, p. 491.

subsidies but the collectives always covered the great majority of the costs of infrastructure established solely within their jurisdiction. Moreover, as we will see below, even in many large projects extending outside the collectives' boundaries, the state called for greater sacrifices from the villagers to bring their own food and simple tools to help reducing project costs. In short, the mobilization of the labor and financial resources of the rural population via the mediation of the collective institutions played a key role in reducing the cost of capital construction and thereby enabled the countryside to achieve a high degree of infrastructural development that was beyond the Chinese state's limited fiscal capacity.

Some scholars have tried to underrate the contribution of collective mobilization to the development of rural economy. Before investigating the local cases of agricultural capital construction, I will address these critiques briefly. In his essay titled "China's Economic Policy and Performance," Dwight Perkins used the growth accounting method in order to specify the separate contributions of five different factors: a. biological package (chemical fertilizer and improved plant varieties), b. labor and labor augmenting machinery used in raising crops, c. expansion in irrigated acreage, d. change in gross value of crop output prices, and e. residual contribution of all other factors and increases in productivity. Perkins locates the labor mobilization variable into the last category of residual factors. After running the regression tests, he concludes that the biological package and increase in irrigated acreage accounts for nearly two-thirds and one-thirds of the increase in agricultural production, respectively. After this conclusion, Perkins claims:

And most of this increase in irrigated acreage...was due to capital investment in modern power-drive tube wells, not to irrigation systems built by large *corvées*. The data for 1965-75 are less reliable but tell only a slightly different story. For that period the residual is at least positive, meaning that there is some part of the rise in crop output left over to be explained by factors other than the increase in modern inputs or the direct application or more labor and machinery to crops...Neither explanation leads one to conclude that labor mobilization for rural construction proved to be a successful way of achieving rapid increases in Chinese agricultural output. At best it was a supplementary contributor. The

reason why the impact was not greater was partly because of management and incentive problems connected with the commune structure that was an essential part of the labor mobilization strategy. But it was also the case that rural construction projects of this type were not the appropriate technology to bring improved irrigation systems to those parts of China that lacked them. South China had begun building such systems a thousand years earlier, and, although these systems could be improved, the gains from such improvements were modest. North China desperately needed a more reliable source of water, but only in a few areas, such as on the edge of the T'ai-hang mountains where both Ta-chai and Lin counties are located, was it possible to achieve significant expansion of irrigated acreage by labor mobilization alone. Elsewhere, one had to make more use of the water of the Yellow River, which meant first removing much of its silt, and that could be done only with a massive program of dam building and grassland development on the upper reaches of the river (Perkins, 1991, pp. 519-521).³⁶

A series of serious problems are present in this statement that make Perkins' argument a typical case of specification error. First, Perkins' definition of the establishment of power-driven wells as a solely capital intensive work is inaccurate. In fact, well irrigation was extended through the combination of capital-intensive and labor-intensive methods in which collectives played major roles (Greer, 1979, p. 95). Second, Perkins fails to take into account the specific contribution of collective labor mobilization to the extension of modern power-driven tube wells. In 1989, total irrigated area by electric-powered machinery (265.88 million mu) comprised 67% of total area irrigated by power-drive machinery (391.59 million mu) (Nickum, 1995, p. 113). Given the fact that electric-powered machinery would not be put into use without access to electricity, which was extremely limited in rural China before collectivization, it is necessary to take a close look the factors behind rural electrification. Small hydropower stations constructed and run by the collectives provided electricity to about one-third of the counties and 40% of the communes in 1982 (World Bank, 1985, p. 153). In short, a significant portion of rural electrification (that enabled the use of electric power-driven wells) was accomplished by the labor and financial resources of the rural collectives.

³⁶ For a similar argument also see Perkins & Yusuf, 1984, p. 51.

Moreover, given the fact that 86,000 large, medium, and small water reservoirs with a total capacity of 417 billion cubic meters were constructed between 1949 and 1981 (Lei, 1984, p. 28), Perkins' attempt to belittle the contribution of irrigation sources other than power-driven wells is not justified. Also, in contrast to Perkins' claim, there was significant scope for hydraulic development even in the most developed areas of South China and our discussion below will show that collective labor mobilization played a key role in this regard. Moreover, reversing the hydraulic decline in the areas surrounding the Yangzi, Yellow, and Han rivers required the elimination of the destructive competition between different localities (which encompassed a wide spectrum from non-cooperation to outright sabotage like demolishing others' dikes) (see Appendix A), which could be accomplished thanks to collectivization. Perkins is correct to mention the requirement of dam building and grassland development, we will see below that collective labor mobilization contributed to these efforts significantly. Therefore, there is no empirical justification of Perkins' separation of the labor mobilization variable from the irrigation variable. More importantly, as Chapter 1 has examined, the biological package fails to increase agricultural productivity significantly in the absence of effective irrigation. Defining the biological package as an entirely separate variable from irrigation expansion (which is inseparable from labor mobilization in the Chinese case) is therefore entirely problematic. Another problem of Perkins' account is the absence of the discussion of the role of rapid increase in the application of organic fertilizer (which was a product of collective labor mobilization) with regard to the biological package. We will see below that the expansion of organic fertilizer use was an important variable of China's agricultural performance until the late 1970s. In sum, Perkins fails to prove labor mobilization's uselessness.

Peter Nolan provides another critique of collective labor mobilization in rural China. Although he acknowledges the fact that “by the late 1970s China had already established an *extremely high level of irrigation* (the leading ‘input’ in the Asian ‘Green Revolution’)” (Nolan, 1988, p. 120), similar to Perkins, Nolan also tries to understate the contribution of labor mobilization to this outcome:

China’s collective farms were extremely ‘successful’ at mobilizing ‘surplus’ labor...Labour was often ‘mobilized’ for *projects organized at levels above the production team*, and it was difficult to devise systems that ensured that returns to localities were proportionate to their contribution...It is unlikely that the opportunity costs of labour for construction work normally assessed carefully. *Returns to such work were relatively low and falling*. Although annual output per agricultural worker rose a little over the long term, the large increase in ‘surplus’ labor per worker mobilized for *low productivity construction helped contribute to the long-term decline in the value of the ‘workpoint’* (i.e. the return per unit of collective labour). There is plenty of evidence to suggest dissatisfaction with the degree of labour mobilization achieved by the Maoist collectives. Peasants reportedly did not fear hard labour, but only feared *useless labour* (Nolan, 1988, p. 56).

As I have already examined, declining value of the work-points was an inevitable result of the deliberate policy of collective self-financing of capital construction. Moreover, by increasing the rural labor force, the rapid growth of rural population also made a downward pressure on the work-point value. Hence, contrary to Nolan’s claim, the change in the value of work-points had nothing to do with the degree of usefulness or productivity of labor in hydraulic construction. Moreover, given the rapid population growth, there will be less output to distribute among the rural population without labor mobilization in hydraulic works. Finally, despite the real problems of distributing the benefits of large-scale labor mobilization above the level of production teams, if rural labor was not mobilized at those levels, large hydraulic facilities that involved several regions (and sometimes several provinces) would not have been constructed to the extent that it actually happened. Again, this would certainly reduce the rate of agricultural growth and put a downward pressure on rural income. In sum, Nolan’s attempt to belittle the contribution of

labor mobilization to rural economic growth by unsubstantiated claims of low productivity and uselessness is not successful. This also responds to Nolan's other claim that

While collective farms do guarantee employment, open unemployment in the countryside of the poor countries is rarely the alternative. Rather, peasants are likely to suffer varying degrees of underemployment depending on their access to productive assets. It is an open question whether it is better to be collectively or privately underemployed (Nolan, 1988, p. 39).

Since the achievement of an "extremely high level of irrigation" in China was closely related to the rural collectives' "extremely successful" performance in labor mobilization (these are Nolan's expressions quoted above), it is clear that the collective system did not eliminate underemployment but reduced it considerably through mobilizing labor in different types of infrastructure works, which in turn increased the productive capacity of the rural economy significantly. These achievements were impossible under conditions of underemployment in a private economy, which excludes collective mobilization. Hence, contrary to Nolan's claim, although from a human rights perspective it is an open question whether it is better to be collectively or privately underemployed (since collectives reduced underemployment by making labor mobilization *compulsory*), from an economic perspective it is certainly *not* an open question.

We can now turn to the cases of collective mobilization for agricultural capital construction, production of organic fertilizers, and agricultural education/extension. Although each of these areas is immensely important and there are abundant sources to examine them in great detail, due to space limitations I will focus on a limited number of local cases. On the other hand, in order to show the generalizability of the presented cases, national-level data on each of these areas will be presented.

Agricultural capital construction

In the post-1950 era, the Chinese state used both capital-intensive and labor-intensive methods to develop agricultural infrastructure. Although using capital-intensive methods such as dam construction was necessary, a comprehensive solution of the infrastructure problem also required activities such as the construction of dikes, irrigation canals, small hydropower stations, afforestation, and land reclamation in which labor-intensive methods can be used broadly. State investment for agricultural capital construction remained significant until the end of collective agriculture. Total state investment to “capital construction of agriculture, forestry, water conservancy, and meteorology” was 77.5 billion ¥ between 1952 and 1981. It comprised 10.7% of total financial expenditure of the state in the same period (Author’s calculation based on State Statistical Bureau, 1983, p. 452). However, this investment level was certainly insufficient to achieve the ambitious agricultural goals of the Maoist leadership. For this reason, the Chinese leadership viewed sharing the costs of the capital construction projects (of both capital- and labor-intensive types) with the local populations as necessary in order to develop infrastructure rapidly.

By mobilizing the unpaid labor power of their members in small and large projects and covering most of the capital costs of the small projects, rural collectives provided the institutional/organizational means to achieve this goal. Both the official press and government reports of the time recognized this point very clearly. For instance, a report of the Ministry of Water Conservancy and Electric Power in 1963 stated:

In order to speed up the construction of the mountainous areas and the harnessing of the Yellow River, appropriate aid from the State is also necessary. But this kind of aid must be built on the foundation of relying on the collective strength of the masses. *All projects that*

can be undertaken by the communes and teams must be undertaken by them. When a project is beyond the power of one production team, it should be jointly undertaken by several production teams and undertaken by them in cooperation with the production brigade. State money can be used only for propaganda, rewards, scientific experiments and the purchase of seeds and saplings and to help finance the comparatively large engineering projects which may be too difficult for the teams to undertake (Greer, 1979, p. 61, emphasis mine).

An editorial of the *People's Daily* on 11 April 1965 made a similar emphasis on collective mobilization as a means to develop all types of rural infrastructure:

Small projects must be undertaken by fully mobilizing the masses: large and medium-sized projects require state investments, but they, too, should be undertaken by following the mass-line and promoting the spirit of self-reliance...*even for large structures among large- and medium-sized projects every effort should be made to reduce State investment...*In building large and medium-sized water conservancy projects, do we need State investment? We say: yes...But this does not mean that large- and medium-sized projects...can only be built entirely by the state (Vermeer, 1977, p. 264, emphasis mine).

The central government also called on the collectives to self-finance the maintenance of the constructed infrastructure. For instance, on 13 December 1963, the *People's Daily* criticized the “supply of water without collecting charges while extending one’s hand to the state for money year after year” and urged the irrigation districts (usually comprising several communes) to “make efforts to strive for self-sufficiency in management expenses” (Nickum, 1980, p. 294).

As a result of this policy, from the start of the establishment of the mutual aid teams in 1952 to the abolition of the People’s Communes in 1984, rural collectives mobilized a vast amount of labor and financial resources of the rural population. As Table 6 shows, labor mobilization for agricultural capital construction absorbed a significant portion of China’s total rural labor force. Taking the lowest and highest estimates of the number of the mobilized villagers on the table, it appears that between 26.94% and 31.78% of China’s total rural labor force was mobilized by the collectives in farmland and water conservancy works. The table also clearly shows that the degree of labor mobilization increased in the final few years of the Mao era and the first year of the post-Mao era in which Huo Guofang

led a large-scale winter works campaign. Between 1973 and 1977, somewhere between 39.16% and 44.16% of the rural labor force was mobilized in infrastructure works.

Table 6. Total Rural Labor Force and the Estimates of the Basic Construction of Farmland and Water Conservancy Infrastructure in China, 1964-1977

Year	Rural labor force (Million)	Number of Participants (Million)	Earth and stone work completed (Billion cubic meters)
1964-65	235.34	30-40	3.5
1965-66	244.51	40-60	3.5-4.5
1966-67	253.68	40-60	3.5-4.5
1967-68	262.85	30-45	2.0-2.5
1968-69	274	50-60	2.5-3.0
1969-70	281.20	60-80	3.5-4.0
1970-71	287.52	90	5
1971-72	286.54	80-90	4.0-4.5
1972-73	292.64	85-95	4.5-5.5
1973-74	296.82	110	6
1974-75	299.46	110-130	15
1975-76	301.42	130-150	25
1976-77	302.50	120-140	15

Source. The data on the total rural labor force is from State Statistical Bureau, 1983, p. 120. The estimates of the total number of participants and earth and stone works completed are from Nickum, 1978, p. 280.

Note: For each annual period, rural labor force figure of the latter year is given.

Withdrawing such a large labor force from agriculture might involve significant risks for agricultural production even if the greatest care was given to organizing mobilization in slack seasons. What made this withdrawal possible was the remarkable increase in the women's participation into farm labor. The women's degree of work participation was limited before the revolution. Since the land reform did not change the production organization, female workforce participation failed to increase during that time (see Appendix A). Rural collectivization changed this situation dramatically. Political campaigns between 1952 and 1976, especially during the Great Leap Forward, the Four Cleanups, and the Cultural Revolution, aimed to remove the barriers to women's participation into agricultural production. Although their historical record is mixed since

gender inequality did not end completely and women's double burden (of reproductive work inside the household and productive work outside of it) increased, these campaigns rapidly succeeded to make the females an integral part of the farm labor force. The share of the farm workers within the total working age women increased from less than 40% in 1950 to more than 60% in 1957 and above 70% in the late 1970s (Croll, 1985, pp. 23-28; Johnson, 1983, pp. 170-173; Lu, 1996, p. 92; Thorborg, 1978, pp. 567-587). Increasing feminization of agriculture made possible the transfer of a large portion of the male labor force to infrastructure construction without any drop in agricultural output. Moreover, although construction work was a male-dominated area, women's contribution to it was far from negligible.³⁷

North China

This policy line determined the trajectory of rural capital construction throughout China in the entire collective era. We can now turn to the regional cases by following a North-South axis. The problem of agricultural infrastructure was most severe in North China. The Yellow River, which crosses eight provinces of North and Northwest China (Gansu, Henan, Inner Mongolia, Ningxia, Shandong, Shanxi, Shaanxi, and Qinghai)³⁸ lied at the heart of this problem. The decline after the mid-19th century of the state's capacity to mobilize labor and financial resources of the local populations and control the

³⁷ As Gail Hershatte's female interviewees from rural Shaanxi recalls, "*men were digging channels and building reservoirs at that time. Women carried fertilizer, planted potatoes, fertilized wheat, hoed vegetables – all these were done by women. Women suffered more and worked more than men when gathering in wheat...*In Village Z, even the work of flood control fell to women. They carried heavy stones to build embankments along the Dan River, which flowed well with the embankment and was prone to frequent flooding. With the aid of two...cadres from the district government, they constructed the dikes to replace the patchwork of sandbags, and thorns which the community had fended off floods before Liberation. *How stable it is*, comments Liu Dongmei, looking at the dikes she helped to build almost half a century ago. *It has lasted for many years. If one part was washed away, we mended it*" (Hershatte, 2011, p. 146, emphasis in the original).

³⁸ The Yellow River also crosses the northwestern part of Sichuan province of southwest China.

destructive competition between the communities located at the upstream and downstream of the rivers resulted in the lack of maintenance of the dikes and embankments surrounding the river. As a result, dikes collapsed frequently and the negative impact of the floods on agricultural output rose dramatically in the 19th and 20th centuries. Also, although irrigation infrastructure had been developed in the upper reaches of the Yellow River for over two millennia, there was not any significant irrigation infrastructure in the lower reaches (see Appendix A). Mobilizational methods were used to solve these problems during the collective era.

In order to solve the problem of flooding, dikes were strengthened across the Yellow River. While 800 kilometers of dike strengthening was completed by 1953, this figure climbed to 1800 kilometers by August 1955. 130 million cubic meters of earth and stone material had been moved in this early phase of activity. Maintaining the dikes also required a great amount of labor. For example, the annual repair of dikes involved 30,000 workers in the Ningxia plain in 1962. New dikes were also constructed in several regions. For instance, in Salaxi county of Inner Mongolia, 60,000 collective members moved 600,000 cubic meters of earth to construct a three miles-long dike in 1956. In Ningxia, a large-scale labor mobilization campaign led to the construction of 288 kilometers of dikes in 1963 and 1964. On the other hand, as long as the soil erosion problem continued, dikes alone could not prevent flooding. Hence, collectives also emphasized soil conservation. 14 million saplings and 60 million shrubs were planted by August 1955. In the Loess Plateau (which entirely covers Shaanxi and Shanxi provinces as well as parts of Gansu, Inner Mongolia, and Ningxia) alone, ten million collective members mobilized for a huge soil conservation campaign in 1959, during the heyday of the Great Leap Forward. Similar

efforts continued in the following two decades (Greer, 1979, pp. 80-96). As a result of the mass mobilization for forestation which primarily focused on the previously largely deforested North China, the ratio of forests in China's total land surface increased from 8.6% in 1949 to 11.81% in 1950-62 and 12% in 1977-81 (Zhang & Song, 2006, p. 384).

In addition to dike construction and soil conservation, large-scale canal projects were carried out in order to achieve the twin goals of controlling the water level (and therefore, prevent flooding) in the Yellow River and using the river to irrigate the water-scarce northern provinces. The "Divert the Yellow River to Benefit the Wei River" (*Yin Huang Chi Wei*) project between 1952 and 1961 was one of the earliest and largest efforts in which state investment and collective mobilization were combined effectively. State investment was used to build sluices, headgates, and other expensive items. 200,000 villagers worked in this project and removed 26 million cubic meters of earth. The People's Victory Canal, which was built in northern part of Henan province between 1952 and 1955, was the first stage of this project. It included a 52 kilometer-long main delivery canal that diverted water from the Yellow River to the Wei River. In addition, 1870 kilometers of irrigation canals and 950 kilometers of drainage canals were constructed, which doubled the irrigated area (from 300,000 mu to about 600,000 mu) in the region. Following the completion of the canal, other projects to divert water to the Wei River were undertaken until 1961. Overall, the project added 1.4 million mu (more than 93,000 ha) to irrigated acreage (Greer, 1979, pp. 84-87; Lou & Hou, 1988, p. 12).

On the other hand, the supply of irrigation created a new set of problems in this region, which were noted in the official Chinese press starting in the 1960s. The groundwater rose from 3-4 meters in the early 1950s to 1.3-1.5 meters below the surface

in 1961. Rising water table increased the problems of soil salinization and waterlogging. In addition, due to lack of experience in canal management, water with high silt content was diverted through the People's Victory Canal during the dry years between 1959 and 1961, which in turn led to serious siltation of the irrigation and drainage canals. State and the collectives tackled with these problems with success. Between 1965 and 1987, 4250 tubewells were dug in the region, which reduced the total siltation by half. The area affected by salinity decreased from 18,600 ha in 1962 to 6,000 ha in 1987. The efficiency of water use also improved thanks to the accumulated experience over two decades. As a result, grain production in the canal region increased by 6.4 times and cotton production increased by 3.7 times between 1951 and 1980 (Lou & Hou, 1988, pp. 12-19).

Another important hydraulic effort took place on the Ningxia Plain. Between 1953 and 1955, 84 kilometers of the Hanyen Canal was renovated to irrigate 780,000 mu of land around Yinchuan city. 40,000 commune members worked to repair the canal in Spring 1959. The Xiakan Canal was repaired in the same period and enabled the irrigation of 150,000 mu of land. The construction of the Qingtong Reservoir in the same period led to the irrigation of 3 million mu of land by 1963 (Greer, 1979, p. 89; Nickum, 1995, p. 59). Numerous medium-sized facilities were also constructed. For instance, in Tongxin county in the southern part of Ningxia, several communes combined their labor force and completed the construction of a reservoir combining a 1500 meters long and 25 meters high dam and 50 kilometer-long main canal within three months in the Summer of 1959 (Greer, 1979, p. 96).

Hundreds of local examples can be given regarding the collective mobilization to construct medium-scale hydraulic facilities during the Cultural Revolution decade but I

will restrict myself here to presenting only one case. In Jimo county of Qingdao peninsula, the first wave of hydraulic development started with the construction of three reservoirs and digging of a small number of wells by the communes during the Great Leap period. However, the technological level of these facilities was backward and therefore problems of drought, flood, and irrigation remained largely unsolved. In order to solve them, massive labor mobilization campaigns were organized by the communes of the county in which a large number of wells and irrigation and drainage canals were constructed. In the construction process, brigades organized special teams of workers for digging wells. In addition, villagers working in other activities during the day regularly joined these teams for a few hours every evening. As a result of the political context of the era in which refusing to work in such projects was politically unacceptable, government employees and teachers working at the commune level, whose income did not depend directly on the outcome of these projects, also joined the workers on a regular basis. Teachers even led their sixth grade students to join the working crowd for two hours for a few days every winter. Labor mobilization intensified in the winter slack seasons. Communes and brigades popularized slogans such as “There is no winter slack season in the Shandong province. We work just the same even when the earth is frozen to a depth of three feet” and “Jimo people will not take a holiday at the Spring Festival. After eating *jiaozi*, we will continue to work the next day.” In winter 1971, 100,000 collective members removed 1.31 million cubic meters of surface to build 645 irrigation channels and 63 drainage channels with a total length of 300 kilometers. A rigorous effort to remove the salinized soil and replace it with soil carried from elsewhere resulted in the creation of 57,000 mu (3800 ha) of good quality farmland. It increased land productivity by 30% in the following year. In winter

1975, collective members spent 190,000 workdays for land improvement projects during which they increased the depth of 75,000 mu of hilly land from 20 cm to 40 cm by carrying out soil collected elsewhere. As a result of these large-scale collective efforts, all the eight medium-scale reservoirs and 19 of the 37 small reservoirs that were in use in the 1980s were constructed during the Cultural Revolution decade (Han, 2008, pp. 129-131).

The few cases briefly presented above show the large scope of the water conservancy and farmland works undertaken by North China's rural collectives through labor mobilization. As Table 11 below clearly demonstrates, this collective effort increased the irrigated acreage dramatically in all northern provinces.

The Jiangnan Plain

The lack of collective organization caused ineffective maintenance of the dikes and thereby aggravated the problem of flooding in Hubei until the 1950s. The case of the Jiangnan Plain in Hubei exemplifies the solution of the collective organization problem in this region. The effective mobilization of the labor and financial resources of the local population helped the state to solve the hydraulic problem rapidly. For instance, in Zhijiang county, half of the expenditure for hydraulic works came from the units at the county level and below between 1949 and 1985 (Zhang, 2014, p. 93). In Hanchuan county, collectives covered 36% of the costs of all water conservancy works between 1950 and 1985 (Hubei Sheng Hanchuan Xian Difangzhi Bianzuan Weiyuanhui, 1995, p. 163). These investment figures do not include the villagers' uncompensated provision of tools that were used in these activities. Also, state investment remained consistently below the agricultural tax paid by the collectives (Zhang, 2014, p. 89-95).

In Hanchuan county alone, 3,844,000 workers participated in hydraulic works between 1950 and 1985. In other words, an average of 106,777 villagers participated in these works each year. The participation rate of the rural labor force in hydraulic works was 22.1%, 22.3%, and 25% in 1955, 1965, and 1975, respectively (Author's calculations based on (Hubei Sheng Hanchuan Xian Difangzhi Bianzuan Weiyuanhui, 1995, p. 116, 163). The mobilized villagers used more than 3.6 billion cubic meters of earth, stone, and concrete between 1950 and 1985. Dangerous sections of the dikes were entirely heightened and thickened. In accordance with the new orientation of “pull the dikes back, relax the flow of the river; slash the steep banks,” twenty-seven dikes were moved back and the river flow area was enlarged. Several villages and streets in towns were demolished and moved backwards in order to complete this operation. As a result of these works, flood discharge capacity of the Han River and its tributaries increased considerably. The volume of river water that can safely flow without causing flood increased from 5000-6000 cubic meters per second in the pre-revolutionary era to 8000-9000 cubic meters per second in the early 1980s. During the three centuries between 1645 and 1945, 110 great floods happened in Hanchuan. After the revolution, as a result of moving and strengthening the dikes and the overall intensification of the hydraulic works, no great flood happened with the exception of the great Yangzi floods of 1954. In Shayang county, the construction of the irrigation system was completed in the early 1980s, just before decollectivization (He, 2012). Even the most marginal rural regions of Hubei experienced radical transformations. For example, Ao village in the mountainous region of Shiyan prefecture doubled its irrigated land after the start of the “Learn from Dazhai” campaign in the village in 1972 (Li, 2009).³⁹

³⁹ I thank He Xuefeng and Li Derui for their detailed explanation of these cases during our several conversations.

We should also incorporate the changes in the government control over labor after collectivization in our explanation of the decrease in the natural disasters' impact on agricultural production. A national survey in 1935 showed that 33.5% of the rural migrants left the countryside due to bad weather. Floods and droughts caused 9.8% and 13.2% of rural outmigration, respectively. In 1931, disastrous floods forced 40% of the rural population of the Yangzi and Huai river basins to leave their farms temporarily. The freedom of migration made this mass exodus possible and prevented the immediate organization of mass mobilization against natural disasters. In contrast, the increased government control over rural labor (due to the combination of the Hukou system and rural collectivization) effectively forced the villagers to stay in the countryside and fight against natural disasters. It thereby helped to decrease the impact of natural disasters all over China (Kueh, 1995, p. 26). Hanchuan county is one of the innumerable local cases of this strengthened organization of disaster prevention and resistance after collectivization. "Flood Control Headquarters" of the county government maintained a large labor force under its control. When the water level exceeded 28 meters, signifying a possible moderate scale flood, the first line comprising 1500 people intervened for flood prevention immediately. When the water level reached 29 meters, the second line comprising 6500 people from the county seat as well as the township and village population, prepared to take action. In case the water level reached 30 meters, the third line of intervention was ready to mobilize over 20,000 people (Hubei Shen Hanchuan Xian Difangzhi Bianzuan Weiyuanhui, 1995, pp. 146-147, 162-165). This collective effort led to rapid increases in agricultural output. Grain acreage decreased by 31% and grain output rose by 72% from

1970 to 1982 (Author's calculation based on Hubei Shen Hanchuan Xian Difangzhi Bianzuan Weiyuanhui, 1995, p. 125).

Jiangsu

Significant infrastructural problems existed even in the most advanced provinces of China. Jiangsu was one of them. Southern regions of Jiangsu constituted the core of the Yangzi Delta, which was the most advanced region of China over centuries. On the other hand, northern Jiangsu was part of the North China Plain ecologically and thereby shared its agricultural underdevelopment in the prerevolutionary era. Xuhuai prefecture of Jiangsu province lying in the southernmost part of the North China Plain and the northernmost part of Jiangsu is an important example of this phenomenon. It occupies one-third of all cultivated land in Jiangsu. In the post-1950 period, Chinese officials categorized Xuhuai as an “intermediate” region in terms of agricultural development, between the underdeveloped North China Plain and the wealthier southern Jiangsu (Powell, 1992, p. 122). Hence, Xuhuai provides us an example of the development of backward regions within the relatively advanced provinces of China.

Table 7. Investment in Water Conservancy Construction in Xuhuai Prefecture of Jiangsu Province, 1949-1980 (Million ¥)

	1949-52	1953-57	1958-62	1963-65	1966-70	1971-75	1976-80	Total
Main works:								
State investment	62	134	309	71	185	259	301	1,321
Mass labor service	42	109	176	37	105	174	164	807
Subtotal	104	243	485	108	290	433	465	2,128
Auxiliary works:								
State subsidies		13	20	24	35	54	132	268
Local funds		8	57	72	126	198	446	907
Mass labor service	51	139	330	279	242	509	746	2,296
Subtotal	51	150	407	375	403	761	1,324	3,471
Total	155	393	892	483	693	1,194	1,789	5,599

Source: Wakashiro, 1990, p. 492.

As Table 7 shows, “mass labor service” (*dazhong laowu*), referring to unpaid labor of the collective members, covered 55% of all water conservancy investment in the prefecture during the first three decades of the PRC.⁴⁰ Local funds (*difang ziji zijin*), comprising the local government budgets and the collective accumulation funds, constituted another 16% of the total investment. Since the actual breakdown of these funds is not provided, we do not know the exact non-labor contribution of the collectives but it is clear that the collectives’ share of the total water conservancy investment was close to 60%. As a result of this self-financed water conservancy construction, which comprised harnessing the Huai River and establishing irrigation facilities, in the 1970s alone about 5 million mu (333,333 ha) of dry land was converted into irrigated land. In 1979, more than one-third of Xuhuai’s farmland was in the category of high-yield stable land. The region was struggling to produce three crops in two years previously. After the development of irrigation, double-cropping became the regional norm (Powell, 1992, pp. 126-127).

Developments in the more advanced regions were also significant. For instance, in Songjiang county near Shanghai, collective members allocated 10% of their total labor to water conservancy projects each year. In large projects organized by the county government, only one fifth of the peasants’ labor contribution was compensated by the county administration. In the projects organized by the communes, the state’s

⁴⁰ The contribution of unpaid labor to capital construction projects was usually calculated based on the monetary value of the total amount of work points earned by collective members in return to their labor contribution to these projects. As noted above, since the villagers themselves were producing the collective output distributed back in the form of work points, in reality they paid themselves for their own labor in capital construction. In cases when the state decided to subsidize a portion of the local infrastructure works, the officials took into account the average monetary value of work points collective members could earn if they were not called to work in construction projects when deciding on the amount of subsidy given. I thank Vivienne Shue and Marc Blecher very much for their detailed explanation of this theme based on their fieldwork in rural Hebei.

compensation covered about 7% of the total labor input. All projects organized by the brigades remained entirely unsubsidized. Based on the mobilization of largely unpaid labor of the collective members, in the 1950s, and mostly during the Great Leap Forward, 16 kilometers of seawall and 80 kilometers of river embankments were constructed, seventeen rivers were dredged, and artificial canals with a capacity of 10 million cubic meters were constructed. Thanks to the start of electrification during the Great Leap Forward, electric pumping stations were established in every commune in the 1960s. Large-scale hydraulic infrastructure and water use in each plot of land were linked up in the 1960s under the system of “checkerization” of the fields. 230 drainage pumps and 331 irrigation pumps were established in the county in the 1970s. By the end of the 1970s, Songjiang had an excellent agricultural infrastructure. Production per unit of farmland rose by more than threefold in the collective period. Labor productivity also rose in the late 1970s and early 1980s, before the start of agricultural decollectivization (Huang, 1990, pp. 182-235).

Guangdong

Similar to southern Jiangsu, there was much scope for infrastructural development in the countryside of coastal Guangdong which had been among the most advanced agricultural regions of the country. By mobilizing labor, rural collectives solved all basic infrastructural bottlenecks in these areas. For instance, in Huicheng commune, an area prone to flooding due to its proximity to the sea, the construction of the Jinniutou Flood Prevention Gate during the Great Leap Forward stabilized the agricultural production at a historically high level (Siu, 1989, p. 178). In Chen Village, the organization of the nationwide “Learn from Dazhai” campaign in 1964-65 resulted in a massive mobilization of the previously surplus labor to transform nature:

Learning from Dazhai also meant heavy investments in labor to transform the collective's natural environment... This involved emptying loads of soil carried on shoulder poles from the mountains. Wherever fields were too sandy, the villagers now had to mix the soil with clay. Where the soil of the mountain fields was too acidic, deep trenches were dug to leach out the acidity. Work was begun on leveling out the rice paddy fields so that the rice shoots could all be planted in the same depth of water... *Customarily, after the backbreaking work of transplanting rice, villagers had worked at a rather leisurely pace until the harvest season drew near. No longer.* They cleared hillsides to plant lychee and pear trees and bamboo; and now that the village had electricity, they installed a water-pumping station to irrigate the new groves (Chan et al., 2009, pp. 94-95, emphasis mine).

The campaign in the Zengbu brigade near Hong Kong during the Great Leap Forward shows the intensity of the mobilization of local labor and capital and its significant results:

Everyone from Zengbu worked on the project, and every adult was given a quota for moving rocks and mud... Children helped their parents fulfill their quotas... Even the foundations of many of Zengbu's old temples and ancestral halls were dismantled to furnish material for the embankments. The work was almost unbearably arduous and, quite literally, backbreaking... As well as building the embankments, in 1961, with the aid of the commune and the state, Zengbu was able to install large drainage pumps to pump the rainwater from their enclosed rice fields into the rivers. At the same time, boundary ridges dividing the fields were removed and the fields were enlarged and made suitable for tractor cultivation... The old meandering river courses that had flowed across the peninsula were either turned into controlled canals or freed from water and converted into rice fields. A three-level irrigation system, operated with electric pumps, was built. By 1962... Zengbu was no longer poor, marshy, and marginal, but fruitful land well-suited to rice agriculture and secure from flooding. Rice production rose dramatically (Potter & Potter, 1990, pp. 78-79, emphasis mine).

Sichuan

Although the hydraulic infrastructure of Sichuan did not experience a big decline in the late Qing and Republican periods, it was not developed enough to support dynamic growth. Similar to other provinces, self-financed construction through labor mobilization became the norm in Sichuan. The construction of the Red Cliff Canal between 1965 and 1968 was a typical case of numerous similar mobilizations that took place in the province during the collective era. The project involved thousands of laborers coming from several communes of Mianzhu and Shifang counties. Villagers working in the project were called to bring their own food, utensils, shelter, tools (hoes and iron bars), and transport

(wheelbarrows and carts) to the construction site. County administrations allocated specific parts of the total work to each commune. Each commune was responsible to dig one part of the canal. Political education/propaganda and work were organized jointly during the entire construction process. A villager describes the work and living conditions of the time:

We worked in squads. We engaged in competition to see who could do the job best. In those years of 'politics in command', Chairman Mao's portrait, quotation boards and red flags were everywhere on the construction site...In the morning while standing...we spoke of what we were going to do that day; in the evening we summed up what we had done. Near the construction site some young people's propaganda teams did some things to encourage and praise those who had worked hard. At that time the water was cold, but we rolled up our pants and waded into work (Endicott, 1988, pp. 74-75).

Collective units which were not expected to benefit much from the project also sent many laborers to the site and they did not receive much compensation from the state. By working mostly during the winter slack season, peasants completed the Red Cliff Canal in three years. The extension of the canal system with projects like this increased the irrigated acreage in Sichuan by 40% (Endicott, 1988, pp. 73-76).

The impact of collective mobilization on the development of irrigation

The remarkable degree of collective labor mobilization exemplified by the local cases presented above transformed the Chinese agriculture entirely. As shown in Table 6 above, in 1978 James Nickum, one the most meticulous Western scholars working on this subject, estimated the total amount of earth and stone work between 93 and 98 billion cubic meters for the 1964-77 period. In a paper published in 1995, Nickum reassessed the strengths and weaknesses of different official data sources regarding irrigation in China in great detail. He concluded that these sources are highly reliable and did not revise his 1978 estimates (Nickum, 1995). Although Nickum's findings have remained unchallenged, lower estimates exist in the Chinese language literature. For instance, Lei Xilu estimated the total amount of earth, stone, and concrete used in the farmland and water conservancy

projects as *above* 70 billion cubic meters for the 1952-81 period (Lei, 1984, p. 28). Both estimates indicate that China's rural infrastructure developed extremely rapidly during three decades of collective mobilization. This becomes clearer if we take into account of the fact that about 250 million cubic meters of earth and stone was used in the construction of the Panama Canal (Nickum, 1978, p. 280) and 240 million cubic meters of earth and stone was used for the construction of the Great Wall of China (ShowChina.org, 2007). In other words, Chinese peasantry mobilized by the collectives constructed the equivalent of more than 290 Great Walls and 280 Panama Canals in only three decades.

Table 8. Irrigated area as % of total cultivated area in China, 1949-1982

1949	16.3
1952	17.9
1957	22.4
1962	27.9
1965	30.9
1975	46.3
1978	48.3
1979	48.6
1982	49.4

Source. Zhongguo Shuili Nianjian Bianji Weiyuanhui, 1992, p. 653.

Table 8 reflects the impact of this work. The share of total cultivated acreage that was irrigated tripled between 1949 and 1982. Two points are worthy of mention. First, despite the catastrophe of the Great Leap Forward, labor mobilization in this period increased the irrigated acreage by a quarter (from 22.4% in 1957 to 27.9% in 1962). Second, half of the total irrigation expansion took place during the Cultural Revolution decade (from 30.9% in 1965 to 46.3% in 1975). By 1982, half of the country's cultivated land was under irrigation, making China one of the most advanced hydraulic nations of the world. This is one of the key factors behind China's superior rural economic performance compared to India. Moreover, in contrast to India where irrigation development was

concentrated in only a few areas, Table 9 demonstrates that despite significant regional variation, the geographical scope of irrigation development was fairly broad in China. With the sole exception of Shanghai, where rapid industrialization explains the slight decrease in its irrigated acreage, the share of irrigated area within total cultivated area increased significantly in every Chinese province. It is also clear that the most rapid irrigation expansion took place in North China, where irrigation infrastructure was dismally underdeveloped before the 1950s. Also, relatively modest growth rates in the provinces on the Yangzi River and in South China reflects the fact that collective mobilization in these water-rich areas primarily aimed to control water rather than expanding irrigation. Nevertheless, the expansion of the irrigated area was still far from negligible in these areas.

Table 9. Annual growth rate of irrigated area in China's provinces, 1952-1978 (%)

	1952-57	1957-78
Anhui	3.9	3.1
Beijing	9.3	10.9
Fujian	3.7	0.5
Gansu	5.6	3.3
Guangdong	10.4	3.7
Guangxi	10.3	2.5
Guizhou	8.7	2.8
Hebei	10.4	4.1
Heilongjiang	15.9	4.1
Henan	10.6	5.1
Hubei	11.1	2.5
Hunan	2.9	2.0
Jiangsu	5.1	5.1
Jiangxi	6.1	1.0
Jilin	25.9	2.3
Liaoning	29.2	4.2
Ningxia	7.7	0.6
Qinghai	12.2	1.7
Shaanxi	11.0	4.3
Shandong	17.7	8.7
Shanghai	-0.2	-0.3
Shanxi	18.0	3.0
Sichuan	9.9	4.8
Tianjin	14.2	4.3

Yunnan	10.4	3.4
Zhejiang	2.0	1.1
China	8.1	3.5

Source. Bramall, 2000, p. 139.

Note: Inner Mongolia, Hainan, Tibet, and Xinjiang are not included in the table due to the lack of complete time-series data.

Reduction of destructive competition

Finally, competition between geographical areas and social groups (and sometimes even among the state officials) often reached dangerous and destructive proportions and weakened China's flood control and irrigation capacity in the imperial and Republican periods (see Appendix A). After the transition to the collective system, the elimination of private landownership and the deepening penetration of the state into the countryside via the collectives either eliminated or reduced this competition to a low level. The establishment of the communes helped the state to control and reduce the conflicts over water allocation between the upstream and downstream communities. For example, in Xujiang county of Jiangxi province, before the construction of a new canal that would divert water from the existing canals in different localities, the county administration organized a conference that brought together the representatives from the regions of the planned and existing canals. At the end of each conference, regional representatives signed an agreement stating that the new canal is necessary and the old canal areas would have priority to use water in case of a great drought. In Meichuan county of Hubei, in order to prevent the emergence of conflict between the upstream and downstream communities, the management of the irrigation district (comprising several communes) often carried out "ideological work" in which the upstream and midstream collectives were encouraged to be frugal in water use and release as much water as possible to the downstream areas. The management organized joint visits of the upstream and midstream cadres to the

downstream areas to let them see with their own eyes that downstream areas needed a steady water supply and they therefore had to use water responsibly. Downstream collectives were also called to use water efficiently and develop alternative water sources such as ponds. More importantly, the irrigation district administration gained the power to organize water allocation directly, which enabled it to release water upstream only during the day and for downstream during the night (Nickum, 1980, p. 297). The experience of the two counties of Sichuan in the aftermath of the construction of the People's Canal in 1968 demonstrates the collective system's positive impact on the disciplining of the local populations and the control of the regional conflicts over water use:

Then the water flowed past and we got less than we expected. Later, during the dry season, thousands of peasants from our communes stood along the side of the canal with their poles, wanting to get more water. The people from Mianzhu came with iron bars and pikes and there was some fighting over the water....The county had to send some people to stop this fighting. The provincial authority decided that two-thirds of the water should be for Mianzhu and only one-third for Shifang county. *We had to accept this*...Leaders of brigades and teams go to the streams and canals armed with this timetable to control the flow of water and to *prevent fighting or stealing of water*. Because of the organization of the county the distribution of water is done well; anyone who tries to steal water will have their water reduced and fines will be levied. *Before, the more people you had on hand, the more water you could take*. Things are more settled and reasonable now (Endicott, 1988, p. 75, emphasis mine).

Similarly, in Chen Village of Guangdong, after the entry of the work teams to organize the Four Cleanups campaign in the village in 1965, "irrigation ditches that had been left undug due to the conflicting interests between production teams were...put in under the workteam's commands. Paddy field were flooded and drained on more precise schedules, and the water in the fields was changed more often than before" (Chan et al., 2009, pp. 94-95). In short, the disciplining of the local population by the collective system not only assisted the state to organize infrastructure projects of various sizes but also enabled it to prevent the emergence of destructive competition over water resources between different localities.

The production of organic fertilizer

As Table 10 demonstrates clearly, scarcity of chemical fertilizer remained a major problem of Chinese agriculture throughout the collective era. Although the national chemical fertilizer industry developed rapidly in this period due to the combined effort of the large urban SOEs and small rural enterprises, the supply of chemical fertilizer could not meet the rapidly growing demand (created mainly by rapid development of water conservancy infrastructure). The deterioration of the Sino-Soviet economic relations in the late 1950s and early 1960s and especially the US-imposed trade embargo following the Korean War did not allow China to meet its chemical fertilizer demand through imports. With the start of the normalization of Sino-American relations the embargo came to an end in 1971. China started to import many fertilizer plants from the US and other advanced countries and quickly developed its capacity of chemical fertilizer production. Although organic fertilizer consumption increased in absolute terms, the ratio of chemical fertilizer use doubled in the following decade (from 26.02% in 1972 to 49.16% in 1981).

Table 10. Fertilizer Supply in China, 1952-1981

Year	Chemical	Organic
1952	0.078 (1.32%)	5.840 (98.68%)
1957	0.373 (4.48%)	7.962 (95.52%)
1962	0.630 (7.97%)	7.276 (92.03%)
1967	2.944 (21.65%)	10.657 (78.35%)
1972	4.312 (26.02%)	12.258 (73.98%)
1977	6.480 (32.83%)	13.259 (67.17%)
1981	13.349 (49.16%)	13.804 (50.84%)

Source. Wang et al., 1996, p. 290.

Note. The first figures show the absolute amount of supply in terms of **million metric tons** in the given year. The figures in parenthesis show the percentage share in the total supply of the given year.

In a “normal” context, both the state and villagers might have simply accepted fertilizer scarcity as a fact that could be mitigated only gradually through the increase in

internal production and imports and not try to change it through popular mobilization. A radically different attitude prevailed in the collective period. The state continuously propagated the importance of boosting the production of organic fertilizer and rural collectives systematically tapped the existing surplus labor to achieve this goal. As Table 11 demonstrates, animal and human excrement were the two largest sources of organic fertilizer. Despite the brief episodes within the Great Leap Forward and the Cultural Revolution, rural collectives did not attempt to collectivize hog production. It therefore remained as a household activity during much of the collective period with the exception of specialized hog production by collective enterprises (Huang, 1990, pp. 205-208). The long-term national target was to have one pig per peasant and households worked hard to raise at least one pig (FAO, 1977, p. 34; Zweig, 1989, pp. 60-61) in order to increase the production of meat and organic fertilizer simultaneously. Although the state underpriced hog products significantly, which was a disincentive for the households, successful propaganda about its benefits with regard to increasing organic fertilizer (and therefore crop output) as well as the collective organization of fertilizer collection and application incentivized the households to step up hog production (Huang, 1990, pp. 206-207). As Table 12 demonstrates, the number of hogs quintupled between 1950 and 1980. Households assumed a significant (but not total) responsibility for the production of goats and sheep, whose numbers more than quadrupled. Collectives assumed greater responsibility in raising draught animals, whose number rose by 45% in the same period. Given the fact that the rural population and labor force almost doubled in this period, which dramatically decreased per capita land availability, this rise in animal stock is nothing less than a remarkable success.

Table 11. The Supply of Organic Fertilizer in China (10,000 tons), 1952-1981

Year	Night soil	Hogs	Drought animals	Sheep &goat	Green manure	Oil cake	Other	Total
1952	198.17	57.00	184.52	22.14	12.13	53.31	56.75	584.02
1957	253.16	105.88	234.71	40.37	41.71	55.42	64.92	796.17
1962	260.74	72.55	201.08	55.15	47.99	33.24	56.84	727.58
1967	335.71	155.17	289.61	66.50	103.78	46.47	68.47	1065.71
1972	384.35	215.27	307.24	68.80	137.26	40.87	72.00	1225.79
1977	417.88	238.22	299.36	74.35	181.57	43.70	70.81	1325.88
1981	434.79	239.78	310.33	86.49	160.96	74.93	73.11	1380.39

Source. Wang et al., 1996, p. 288.

In addition to successful animal husbandry, collective labor mobilization played a critical role in the rapid rise of organic fertilizer production. It was estimated that between 1957 and 1977, 97.3 million workdays were spent annually to produce organic fertilizer. Besides collecting animal and human waste, villagers regularly collected large quantities of grass and river mud and prepared green manure and oil cake. Accumulation, transportation, and application of organic fertilizers took up between 30% and 40% of total manpower expended annually (Rawski, 1979, pp. 92-96).

Table 12. Animal Husbandry in China, 1950-1980 (Million)

Year	Hogs	Goats	Sheep	Draught animals
1950	64.04	18,21	28,52	65,134
1960	82.27	49,76	61.64	72,982
1970	206.10	61,41	85.63	93,876
1980	305.43	80,68	106.63	94,632

Source. State Statistical Bureau, 1983, p. 178; State Statistical Bureau, 1993, p. 340.

Note: Draught animals include cattle, buffalos, donkeys, horses, and mules.

As a result of successful incentivization of households and mobilization of the surplus rural labor by the collectives, organic fertilizer production rose by 136% between 1952 and 1981. This relieved the problem of fertilizer scarcity and enabled China to make greater use of its added irrigation capacity than an alternative (“normal”) scenario of the absence of collective labor mobilization.

Agricultural extension

Although a lot has been accomplished since the start of the global Green Revolution in the early 1960s, the use of high-yielding seed varieties progressed rapidly in only a few Third World countries. China is one of them. The share of areas under hybrid seed varieties increased from almost nil in the early 1950s to 14.2% of the rice area, 40% of sorghum area, and above 60% of corn area in 1980. The share of the semi-dwarf, non-hybrid seed varieties increased from almost nil in the early 1950s to above 90% of rice area and above 55% of wheat area in 1984 (Stone, 1988, pp. 792-795). In short, China carried out the Green Revolution very rapidly in the collective period. This success had two main sources: a. the state-financed agricultural research system, which developed the high-yielding seed varieties in laboratories, and b. the agricultural extension system, which was partly financed by the state and relied heavily on the self-financed services provided by the rural collectives, that spread the use of the new seeds as well as other modern inputs and methods in the countryside.

Starting with the former, China established an advanced agricultural research system in the Mao era, despite the fact that efforts to overcome the difference between the manual and mental labor led to some unproductive experiences of moving agricultural research from central government institutions in cities to rural communes during the Cultural Revolution. Although it certainly helped the extension activities in the countryside, decentralizing research activities negatively impacted the development of agricultural research in China. Despite this problem, however, China's overall agricultural research performance was still very respectable during this period. Instead of relying on seed imports, China used the seeds purchased from abroad and the International Rice

Research Institute in the Philippines only as lab material in order to develop new seed varieties suitable to different ecological conditions of its regions. In the Mao era, the productivity of the Chinese bred seeds was either equal or superior to the world's best varieties.⁴¹

On the other hand, without a strong nationwide agricultural extension service the application of agricultural science on the farms cannot be guaranteed. Extension of the (land- and labor-saving) technologies to the countryside has been a difficult task for the Third World states due to several reasons. First, states have to employ a large number of extension workers to accomplish this task, which is quite challenging due to their very limited fiscal resources. Second, a significant portion of the employed extension workers are urbanites trained in agricultural technical schools and universities. Although they have knowledge necessary for the extension work, their preference of the urban lifestyle encourages them to stay as little time as possible in the countryside. Third, the fact that the extension worker is a stranger to the rural localities, he/she has to gain the trust of the villagers first in order to accomplish the tasks at hand. Extension workers' tendency to avoid spending a long time in the countryside makes this an especially challenging task. For these reasons, agricultural extension in Third World countries has been an arduous task full of problems.

⁴¹ One of the most authoritative accounts of China's Green Revolution states that "Chinese bred varieties of rice, wheat and sweet potato, and to a considerable extent corn and sorghum, became comparable to the best varieties in the world in terms of yield, early maturity and some stress factors while lagging in resistance to other sources of stress and taste characteristics. Average sweet potato yields surpassed those of all major world producers. Successful farmer varieties of cassava and white potato were bred, selected or imported prior to the late 1960s but selections from earlier periods came to dominate national plantings for cassava, while the area of both cassava and white potato increased rapidly. Unlike sweet potato for which new varietal improvements continued into the 1970s average yields for cassava and white potato remain around the average for Asia, although the very highest yields are comparable to the highest yields elsewhere" (Stone, 1988, p. 798).

China avoided much of these problems due to the collective organization of the extension activities. First, although a salaried extension bureaucracy existed at the county level, collective cadres who were not on government payroll shouldered the bulk of the extension responsibilities. Hence, the cost of extension was reduced significantly.⁴² Second, throughout the collective era but especially during the Cultural Revolution, agricultural extension stations at the county level were obligated to establish and work with agro-technical stations at the commune level, agro-technical teams at the brigade level, and agro-technical groups at the team level (FAO, 1980, p. 67). Every production team, the lowest level of the collective organization directly responsible for farming, had to have one agricultural technician (*nongjiyuan*). The agro-technical personnel at the county level continuously trained the cadres of the agro-technical stations at the commune level, who frequently organized training sessions for the agricultural technicians at the team level (Li, 2009, p. 236). As a result, agricultural extension reached all farming units of China based on this organizational setup. Third, since the extension workers were not strangers, the problem of lack of trust between the extension personnel and the farmers was generally absent in China (Perkins & Yusuf, 1984, p. 55).

Finally, the extending reach of the state to the countryside via the collectives enabled the state to force the peasants to use new inputs and techniques rapidly. Of course, this high state capacity increased the risk of the extension of useless/unproductive and even harmful practices. For instance, heavy, double-wheeled, double-bladed plows, which were promoted by the state throughout China in 1956, turned out to be useless in southern paddy

⁴² As a FAO study team reported in 1977, “in China the entire Party and Government organization forms one vast agricultural extension system...One effect of this system has been to share with farmers what before was the Government’s sole responsibility for agricultural research and extension. This has reduced costs” (FAO, 1977, p. 56).

rice regions and led to the waste of limited financial resources.⁴³ Also, during the Great Leap Forward, based on an exaggerated report from Shandong province suggesting that plowing the earth half meter deep would double the yield, Mao Zedong called all communes to do the same. In an atmosphere of utopian optimism and blind commandism, Mao's instruction led to a craze of unnecessarily deep plowing and a corresponding decline in crop yields (Li, 2009, p. 85). Similarly, the call for close planting led to excessive overplanting of seeds and decreased crop yield (Chan et al., 2009, p. 25). However, Chinese authorities did not repeat similar mistakes in the next two decades. Hence, high state capacity led to the rapid adoption of beneficial farming practices throughout the country.⁴⁴

Based on these capabilities, various types of extension work were carried out continuously. The state sent collective cadres to remote regions of China for educational purposes. For instance, during the "Learn From Dazhai" campaign of the 1960s and 1970s, which emphasized the productive as well as political achievements of the Dazhai brigade of Shanxi province, over 60 million people visited Dazhai (FAO, 1977, p. 8). Various local examples also demonstrate the existence of long trips for agricultural extension. In a commune nearby Wuhan city of Hubei province, cadres were sent to Hainan province to learn the hybrid paddy varieties used there and then started to experiment with these

⁴³ "In their existing form these plows were technically unsuitable for the wet fields, into which they sank. The water buffaloes, lacking a collective spirit, remained true to their tradition by refusing to work in pairs, while a single animal was not usually strong enough to pull the plow. As a result, thousands of these expensive plows were discarded by the collectives, at incalculable cost" (Walker, 1968, p. 420).

⁴⁴ The role of high state capacity is confirmed by the case of Chen Village of Guangdong. The work team that came to the brigade to carry out the Four Cleanups campaign transformed the entire agricultural scene by using its political power: "The peasants of Chen Village nursed a healthy reluctance to try out radically new agricultural techniques. People as poor as themselves could not afford to risk their food crops in experiments... Had the village not been under the workteam's control, the local cadres might never have sanctioned a headlong plunge into these innovations. But the workteam was adamant, and...had the power and prestige. Chen Village joined the Green Revolution" (Chan et al., 2009, pp. 95-96).

varieties after they returned back to the commune (Lao, 2006).⁴⁵ Training courses of varying lengths were organized at the local level throughout the country. Furthermore, most communes established experimental farms in which new inputs and techniques were tried repeatedly in order to find the most appropriate practices suitable to local conditions. By finding out and bearing the costs and risks associated with new technologies, communes were able to spread these techniques and technologies rapidly and smoothly (Lao, 2006; Perkins & Yusuf, 1984, pp. 55-56). While useless methods were abandoned quickly, useful methods were popularized rapidly.⁴⁶

In short, by enabling the state to acquire a high capacity to force rapid adoption of the new farming practices not only in a few regions but throughout the country and with a relatively low cost, rural collectives played a key role in accomplishing rapid and geographically broad agricultural extension in China. As will be explained in the next chapter, the institutional legacy of this collective extension system was quite strong in the 1980s. As Chapter 4 on post-independence India will confirm, rapid, broad, and inexpensive agricultural extension was one of the key factors behind China's better agricultural performance than India's.

⁴⁵ I thank Lao Tian for his detailed explanation of this case to me.

⁴⁶ The case of the Qidong commune of Jiangsu exemplifies the effective learning by doing process of the time. In 1976, "the government introduced the method of intensive planting for cotton cultivation. By that method, a 3.4 meter-wide strip had to be planted with six lines of cotton plants, and the distance between individual plants on a line had to be 13 centimeters. The intensive planting, in fact, reduced not only the nutrition of the soil available to each crop but also the sunshine and air received by the plant. Therefore, during the first two years of its application in the No. 11 team, the newly appointed team leader ignored the commune's requirement and decided to extend the distance from 13 to 33 centimeters. He also reduced the use of fertilizers at the time of planting seeds as the commune required, and instead delayed the heavy use of fertilizers to the time when the crop blossomed, to stimulate the growth of bolls. The result was stunning. The team beat all other 191 teams in the entire commune and harvested 254 catties of ginned cotton per mu, a record high in the commune's history...*The commune leader highly praised the team leader and subsequently promoted him to the position of brigade leader*" (Li, 2009, p. 237, emphasis mine).

Agricultural mechanization

The existence of a sizable surplus of labor in the agricultural sector did not make agricultural mechanization unnecessary in China due to two related reasons. First, as is true elsewhere, agricultural mechanization was the only way to increase per capita crop output continuously, especially in a land-constrained country like China. Second, farm mechanization was the only way to increase cropping intensity because in order to practice double or triple cropping, the tasks of harvesting the previous crop, preparing land, and transplanting the seeds for the next crop had to be completed within a maximum of 15 days in large areas of China. However, animal and human labor resources were insufficient to accomplish it. Farm mechanization was therefore necessary to increase land and labor productivity in rural China despite its enormous labor force (see Appendix A).

Rural collectivization assisted agricultural mechanization in several important respects. First, since mechanization requires increasing the production scale, large collective farms were established by amalgamating tiny household plots. Second, since the scarce and scattered resources of the poor peasant households were not conducive to financing mechanization, amalgamation of their resources and compulsory savings under the organizational framework of the collectives helped to remove the financial obstacles to farm mechanization. Third, agriculture-based financing of industrialization in the cities and the countryside enabled the production and use of increasingly large number of farm machinery. In fact, as I have discussed in Chapter 1 briefly and will examine further below, rural collectives established medium and small farm machinery factories and machinery repair stations. Finally, collectively organized agricultural extension activities developed the human capital required for operating farm machinery efficiently. Due to these factors,

as Table 13 demonstrates, mechanization of agriculture progressed very rapidly in China throughout the collective era but especially during the Cultural Revolution decade. It gives further support to our conclusion that for the rural economy the Cultural Revolution meant rapid progress rather than chaos.

Table 13. Agricultural Mechanization in China, 1952-1982

Year	Large and medium tractors	Small and walking tractors	Combined harvesters
1952	1307		284
1957	14674		1789
1962	54938	1000	5906
1965	72599	4000	6704
1978	557358	1,373,000	18987
1980	744865	1,874,000	27045
1982	812447	2,287,000	33904

	Large and medium tractor-towed machines	Tractor-ploughed area (ha)
1952		1360000
1957		26,360,000
1962	192,000	82,840,000
1965	258,000	155,790,000
1978	1,192,000	406,700,000
1980	1,369,000	409,900,000
1982	1,374,000	351,150,000

Total power of agricultural machinery (kw)	
1952	180,000
1957	1,210,000
1962	7,570,000
1965	10,990,000
1978	117,500,000
1980	147,460,000
1982	166,140,000

Source. State Statistical Bureau, 1993, p. 306, 312.

Although the total quantity of labor-intensive practices increased in order to make possible the expansion of hydraulic works, production of organic fertilizer, and multiple cropping, as Table 13 shows, the use of farm machinery also increased simultaneously. In

short, the collective-induced agricultural mechanization led to double (labor and capital) intensification in Chinese agriculture.

Sources of agricultural growth in the collective era

As I have already analyzed each important factor of agricultural development, I can now briefly examine how they interacted with each other and contributed to the success of collective farming in China. The first source of agricultural success was the decrease in impact of natural disasters on crop output. By mitigating the effects of floods and droughts, the development of water conservancy and farmland infrastructure effectively saved China from crop shocks. Also, increased government control over rural labor (due to the combination of the hukou system and rural collectivization) effectively forced the villagers to stay in the countryside and fight against natural disasters and thereby helped to decrease the impact of natural disasters further. As a result, the size of areas impacted by floods and droughts decreased from 63% in 1952-66 to 45% in 1970-83. The area suffering from a crop loss of more than 30% decreased from 40% to 33% in the same period.

The second source of agricultural growth was the increase in cropping intensity due to the combination of the decrease in the impact of natural disasters and farm mechanization's successful squeezing of successive harvests into the frost-free season. As a result, the average national multiple cropping index increased from 131 in 1952 to 145 in 1983. In thirteen southern provinces, it rose from 152 in 1952 to 203 in 1979 (Kueh, 1995, p. 34).

The third source of agricultural growth was the increasing application of chemical fertilizers and other modern inputs, which boosted land productivity. Finally, by increasing

the output per cultivator in each cropping cycle, farm mechanization increased labor productivity.

Table 14 demonstrates the remarkable performance of collective farming in China. Between 1952 and 1981, land productivity more than doubled in grain, cotton, and sugarcane and increased by one-third in peanuts. The figures for 1962 reveal the adverse impact of the Great Leap Forward on the production of all major crops. It appears clear that had the ill-conceived Great Leap Forward strategy not been adopted, the increase in land productivity would be greater than it actually happened.

Table 14. Output of Major Crops Per Hectare, 1949-1981 (kilogram/ha)

Year	Grain	Rice	Wheat	Corn	Soybeans	Tubers	Cotton	Peanuts	Sugarcane
1949	1035	1890	645	NA	615	1410	165	1020	24,420
1952	1320	2415	735	1350	825	1890	240	1290	38,955
1957	1470	2700	855	1440	795	2100	285	1320	38,985
1962	1320	2340	690	NA	690	1935	225	855	22,395
1965	1635	2940	1020	1515	720	1785	420	1050	38,220
1978	2535	3975	1845	2805	1065	2700	450	1350	38,505
1979	2835	4245	2145	2985	1035	2595	495	1365	42,030
1980	2745	4140	1890	3075	1095	2835	555	1545	47,565
1981	2835	4320	2115	3045	1170	2700	570	1545	53,820

Source. State Statistical Bureau, 1993, p. 336.

Note. Grain includes rice, wheat, corn, soybeans, and tubers.

The increase in labor productivity was more modest. This was due to the neglect of population planning until the second half of the 1970s. The collective system had a built-in pro-natal tendency because more able-bodied workers could earn more work-points and increase household income. Hence, it encouraged rural households to expand. Furthermore, the rapid increase in life expectancy due to the improvement of rural healthcare also promoted population growth. Although both factors were quite visible in the 1960s and 1970s, the Maoist leadership did not make any decisive move towards population planning. This had nothing to do with state capacity because we have already seen that Chinese state

of the time was capable of implementing even more challenging policies. Also, although its capacity did not increase, the Chinese state checked population growth effectively after the announcement of the one-child policy in 1979. Hence, the absence of serious population planning was a problem of policy rather than capacity. Also, the Maoist leadership's reluctance to check the population growth cannot be logically explained with reference to its labor mobilization strategy because China's surplus rural labor was already very high in the 1950s.

Table 15. Output of Major Agricultural Products Per Capita, 1952-1980 (kilogram/person)

	1952	1957	1965	1978	1980
Grain	288.1	306	272	318.7	326.7
Cotton	2.3	2.6	2.9	2.3	2.8
Oil-bearing crops	7.4	6.6	5.1	5.5	7.9
Pork, beef, and mutton	6.0	6.3	7.7	9.0	12.3
Aquatic products	3.0	4.9	4.2	4.9	4.6

Source. State Statistical Bureau, 1993, p. 355.

As a result of this policy mistake, China's total population almost doubled between 1949 and 1982 (from 541,670,000 to 1,015,410,000). The rural population increased at roughly the same rate (from 484,020,000 to 803,870,000). More importantly, the rural labor force doubled (from 165,490,000 to 332,780,000) (State Statistical Bureau, 1983, p. 103, 120). Consequently, per capita land availability, which had always been low, decreased even further. Arable land per capita dropped from 0.19 hectare in 1952 to 0.17 ha in 1957, 0.14 ha in 1965, and 0.12 ha in 1975. Arable land per farmer decreased from 0.62 ha in 1952 to 0.58 in 1957, 0.44 ha in 1965, and 0.34 in 1975. It was less than other land-scarce countries such as Japan and India, where per farmer arable land was 0.27 ha and 0.44 ha, respectively (Riskin, 1987, p. 4). In these circumstances, even keeping per capita output at the same level was a great challenge and should be considered as a

significant success. As Table 15 shows, China's collective agriculture performed even better and managed to increase per capita output of all major agricultural products. Moreover, per capita agricultural output accelerated in the late 1970s. Overall, annual growth rate of per capita agricultural production in China was 3.9% between 1961 and 1970 and 1.2% between 1970 and 1980. In India, annual growth rate of per capita agricultural production was -0.4% between 1961 and 1970 and 0.4% between 1970 and 1980 (UNCTAD, 1993, p. 470, 472). In China, the annual growth rate of agricultural labor productivity was 5.7% between 1961 and 1969 and 0.17% between 1970 and 1979. In India, the same figure was 0.23% between 1961 and 1969 and -0.01% between 1970 and 1979 (Fan & Chan-Kang, 2005, p. 139). Had the chemical fertilizer supplies increased earlier and/or the Maoist leadership started to check population growth in the late 1950s or the early 1960s, labor productivity in agriculture would certainly increase more rapidly than it did. Overall, by increasing labor productivity despite the rapid decrease in farmland availability and continuing fertilizer scarcity, China's collective farming achieved a remarkable success.

Collective Mobilization and the Development of Human Capital

Chapter 1 has examined the importance of human capital in economic development and how rural China's dismally low human capital was a significant obstacle to its economic development in the prerevolutionary era. As we have seen, the literacy rate in China as a whole was less than 20% and this figure was certainly much lower in the countryside. Similarly, life expectancy at birth was 40.8 years in China as a whole in 1950-55. Solving the problems of rural education and healthcare was an important goal of the CCP, which came to power primarily due to the support of peasants. Also, since the rural

population comprised the great majority of the population, the party-state leadership had been aware of the importance of solving these problems as an imperative of long-term developmental success. On the other hand, during the first few years of the PRC the state did not consider the amalgamation of households into mutual aid teams and cooperatives as a very urgent matter. Similarly, the leadership also did not view the (transfer of many administrative and economic responsibilities to the cadres) as an urgent task. Therefore, there was not a great need for many villagers and cadres having basic bookkeeping, accounting, and report writing skills in these early years. Similarly, although healthcare gained some attention of the leadership, there was not much sense of urgency with regard to improving rural healthcare in this period. As Mao Zedong's approach in favor of rapid collectivization became the party-state policy in 1954 and 1955, the situation changed dramatically. Collectivization rapidly increased the requirement for a healthy and educated labor force and cadres in the countryside.

A closer look at the most advanced parts of the Chinese countryside, which had better human capital than the interior provinces, helps us understand the actual magnitude of the emerging human capital requirements. In Fengtang township in Luoding county of Guangdong province, five of the eight households in one of the mutual aid teams did not have a single literate member. Since keeping track of each household's labor contribution was necessary to divide the team income, written records had to be kept. Team members decided to distribute a piece of paper to every household. Every team member was told to use an incense stick to burn one hole in their piece of paper for each day they worked. After a short time, one family's sheet of paper accidentally burned. After the accident, member households could not agree on a new method of record keeping and therefore decided to

disband the team altogether. In Charong township of Guangdong, one of the peasant cooperatives did not have a single literate member. Since no one was able to keep records, at the end of each work day, members went to the house of the team leader and deposit one yellow bean in his/her section of the bamboo for each full day of work and one grain of rice for a half day's work. In another new cooperative, young people who could recognize 100 Chinese characters were appointed as accountants. However, this was a very low degree of literacy and these accountants therefore had to draw abstract lines and circles to illustrate various agricultural activities. After a while, none of them could remember what these symbols referred to. In Guangning county, an illiterate cooperative leader relied solely on his memory to organize production, which led him to make serious mistakes in assigning work (such as dispatching large teams to work on tiny plots) and recording and calculating work-points.

These examples were not exceptional events isolated from general trends. In fact, four out of seven cadres in most of the townships of Guangdong were illiterate in 1956. Given the fact that townships (later on, communes) constituted the top layer of the rural organization that had to maintain direct and frequent contact with the county governments and therefore included more literate cadres than lower layers (village/brigade and production team), the real dimension of the literacy problem was even greater. It was frequently reported that organizational and management problems constituted the major cause of the dissolution of the cooperatives in this formative period. In Guangdong alone, between February and July 1955, at least 20,000 mutual aid teams and cooperatives were disbanded (Peterson, 1997, pp. 79-80).

The urgency of spreading literacy and algebra skills became evident again during the Four Cleanups campaign in 1965 during which the central government dispatched work teams to every collective in the country to check their accounts and find out the sources of corruption and other administrative problems. For instance, in areas of coastal Guangdong, work teams faced difficulty to determine how much of the irregularities “was the result of corruption and how much the result of inevitably sloppy bookkeeping of semiliterate and untrained village officers.” For example,

One team’s accountant had simply jotted his figures down on slips of paper and throw them into a big basket. When the workteam audited his accounts they were in utter confusion: sometimes his “records” suggested there should have money left over, but perhaps a thousand *yuan*... would be missing; sometimes there was supposed to be a debit, but there would still be money in the team’s till. The chaos – and the temptation to pilfer- was compounded when at times cashier, warehouseman, and accountant were one and the same person (sometimes the teams had not been able to find enough literate peasants of trustworthy class backgrounds to fill all the posts). Often even the cadre charged with corruption did not himself know the exact amount of cash and goods he had pocketed (Chan et al., 2009, pp. 49-50).

Hence, developing literacy became an urgent imperative for running the collectives well.⁴⁷ A similar sense of urgency existed with regard to rural healthcare. Since the collectives were demanding harder and more intensive work from their members, villagers having health problems were reported to lack the confidence to meet such requirements. Local cadres were telling their higher-ups that poor health was decreasing the enthusiasm of the peasants for joining the collectives.

We can take the example of schistosomiasis (snail fever), which was one of the most common rural health problems at the time. In Songjiang prefecture near Shanghai,

⁴⁷ As an official report published during the transition to advanced cooperatives stated, “The development of the cooperativization of agriculture is changing the outlook of all rural work, and one of these changes is the demand of the peasants for the study of the written language which becomes more and more urgent. For the running of the cooperatives calls for the drawing up of plans, the keeping of books, and if the people are illiterate, these tasks cannot be done well. This is why [the peasants] say, “Cooperatives are really good, but without knowledge of characters, we cannot run [them] properly” (Peterson, 1997, p. 80).

which was one of the most advanced rural regions of China, 73.6% of military age males had schistosomiasis. The same ratio was about 90% in many less developed regions. It was reported that schistosomiasis patients were less enthusiastic about joining the communes than healthy people and many of them were withdrawing from the communes quickly due to their sickness (Gross, 2010, p. 479-480, 527). The party secretary of Yujiang county of Jiangxi province defined schistosomiasis as “a great barrier to agricultural development and the collective system.” At a meeting in 1954 to initiate a public health campaign, one local leader declared that, “if you want to increase the amount of grain you must have a healthy body; if you want to have a healthy body you must eliminate what threatens its health.” In December 1955, the Jiangsu provincial committee stated that schistosomiasis was adversely impacting agricultural production. The cadres in Jiangdu county of Jiangsu declared that schistosomiasis was depleting the productive energy of the peasants and therefore decreasing their ability to pay the grain tax. Similarly, in a national conference on rural healthcare, a local cadre from Anhui stated that treating schistosomiasis meant “guaranteeing the work of launching the cooperatives” (Gross, 2010, p. 518).

In short, solving the problems of rural healthcare and education quickly became an existential matter for the collective system that had to be tackled urgently. However, since the Chinese government did not wish to cut high military spending or compromise its ambitious heavy industrialization program, solving these significant problems of the vast countryside rapidly through government spending was out of the question. In fact, educational expenditure constituted only 6.5% of total government spending in China between 1950 and 1978 (Tsang, 2000, p. 598). By 1978, China’s educational spending was significantly below the median of 82 other developing countries surveyed by the World

Bank (Peterson, 1994, p. 97) including India where educational expenditure constituted 10.16% of total government spending (Author's calculation based on the Indiastat Database). Similarly, the ratio of healthcare expenditure to GDP was 1.53% in China between 1950 and 1980 (China Health Yearbook Editing Committee, 1985, p. 59), which was not dramatically higher than Indian figures of 0.22% in 1950, 0.49% in 1955, 0.63% in 1960, 0.61% in 1965, 0.74% in 1970, 0.81% in 1975, and 0.91% in 1980 (Indiastat Database, 2014).

Xiafang strategy

In order to overcome the problem of capital scarcity in human capital development, Chinese state also used mobilizational methods. The most important strategy implemented for this purpose was known as “up to the mountains and down to the countryside” (*shangshan xiaxiang*), or simply “sending down” (*xiafang*), which involved the transfer of millions of urban educated youth (middle school and university graduates) and state employees (comprising medical personnel, engineers, technicians, factory workers, etc.) from urban to rural China (Bernstein, 1977; Bramall 2007, pp. 147-150; Bramall, 2009, pp. 163-166; Wen, 2012, pp. 32-72). Although this strategy has been associated with the Cultural Revolution during which over 15 million urban educated youth were sent to the countryside, its roots go back to the Great Leap Forward. A large number of rural emigrants who had been employed in the urban enterprises until 1960 were sent back to the countryside in 1960 and 1961. Many state employees were also transferred to the countryside temporarily in the aftermath of the economic crisis in 1960-61 and the political turmoil of 1968. Overall, about 40 million people were sent to the countryside between 1960 and 1976. Hence, the *xiafang* strategy helped the Chinese state to decrease

unemployment, educational spending, and political chaos in the cities. To put differently, in contrast to the great majority of the Third World states, based on its high degree of control over the labor force the Chinese state managed to externalize the costs of the crises of urban industrialization to the countryside (Wen, 2012, pp. 32-72).

On the other hand, these purposes cannot solely explain the Xiafang policy. Although the radicalization of the youth created all sorts of problems for the Maoist leadership, it also released a potentially creative/constructive energy. Hence, by linking the goal to overcome the gaps between the city and the countryside and the worker and the peasant with the Xiafang campaign, the Maoist leadership provided a new goal to the radicalized youth. As the argument went, if the young people wished to prove their revolutionary credentials, then they should put their theory into practice by volunteering to serve the peasants and the countryside. This policy would provide crucial assistance to rural development. According to an editorial published in *China Youth Daily* in 1964, “to realize mechanization, electrification, chemicalization and universal building of water conservancy projects in the 20 to 25 years to come...cultured youths with socialist consciousness [were] urgently needed” (Bernstein, 1977, p. 60). Similar messages were also conveyed to the urban personnel.

Most of the 20 million sent-down youth and state employees served in rural areas close to the big cities. However, even these relatively advanced areas badly needed these services and therefore benefited from them. Moreover, many of the urban youth and state employees were dispatched to underdeveloped areas of the interior and western China. The sent-down urban talent made two main contributions to human capital development in rural China. They worked as doctors and teachers in the newly established schools and clinics.

More importantly, they helped to organize training programs to generate a new generation of doctors and teachers from within the village youth. A critical factor behind the success of these efforts was that many of the incoming youth did not leave the countryside after a short period of time. The state instructed the collectives to absorb this additional labor force. Incoming youth had to work in farms along with the ordinary villagers and earned work-points for their labor input in the farms, clinics, and schools. Since they earned their subsistence, the sent-down youth was able to spend a long time in the countryside. In other words, the existence of the collectives made possible a prolonged process of human capital formation in the countryside.

Mobilization of labor and resources

Increased government control over land following collectivization enabled easy access to land for education and health related projects. For example, ancestral halls, tombs, and empty buildings were used as schools and clinics. The abolition of private landownership helped to carry out infrastructure that helped to develop agricultural infrastructure and clean up the environment simultaneously and contributed to the prevention of communicable diseases stemming from poor hygiene.⁴⁸ Production teams' lands were often expropriated without compensation to construct new schools and clinics.

As in the agricultural capital construction works, collective members provided largely unpaid labor power for the construction of schools and clinics. Moreover, after the

⁴⁸ For example, in Hedong village of Jiangxi province, six hillocks with graves were converted into farmland as part of the anti-schistosomiasis campaign. Later on, the party carried out an intensive campaign to convince the peasants to remove 367 ancient tombs in order to destroy the putative snail reservoirs. Peasants were told that the traditional superstitions had led the greenery grow freely around those tombs and created a breeding space for snails spreading the disease. Peasants finally agreed to this proposal. 60 mu of land was added to collective land in this way (Gross, 2010, pp. 536-538).

establishment of these facilities, collectives continued to self-finance them by using their welfare funds. In general, brigades had to finance clinics and primary schools and communes were obligated to finance larger clinics (and even hospitals) and secondary schools (Bernstein, 1977; Fang, 2012, pp. 42-66).

It is important to underscore the fact that despite the persistent regional inequalities, the party-state's push for a nationwide collective effort improved the situation in both advanced and less developed areas. For instance, the number of "barefoot doctors" (comprising the sent-down youth and the villagers) was approximately 1 million in 1968-70, 1.3 million in 1973, 1.76 million in 1977, and 1.46 million in 1981. The number of health aides in the countryside was approximately 3.7 million in 1970 and 2 million in 1981. Each brigade had 2 to 5 barefoot doctors and 2 to 10 health aides (Bien, 2008, pp. 17-22; Hipgrave, 2011, p. 227). Hence, although wealthier brigades had more healthcare personnel than the poor brigades, the latter also continuously increased its number of personnel. Similarly, the number of teachers serving in commune and brigade schools reached 4.5 million in 1980, comprising about half of all elementary and secondary school teachers in China at the time (Wang, 2002, p. 110).

Rapid development of human capital

As a result of the mobilization of labor and financial resources of the rural population all over the Chinese countryside, the health and education levels of the villagers improved rapidly. Literacy rate in rural China (at the county level and below) reached 65.26% in 1982. 78.92% of males and 50.99% of females were literate in rural China in the same year (State Statistical Bureau, 1985, pp. 32-33, 360-369). In contrast, in rural India, literacy rate increased from 12.1% to 36% in the same period. In 1981, 49.6% of

males and 21.7% of females were literate in rural India (Government of India, Ministry of Finance, 2002). Also, life expectancy of the Chinese population increased from 40.8 in 1950-55 to 66.4 in 1980-85, which was clearly a more rapid improvement than India where the same figure rose from 37.9 to 56 in the same period (United Nations, 2009, p. 184, 276). As we will see below, this dramatic expansion of the human capital base paved the way for rural China's remarkable industrial success in the 1970s and 1980s.

Rural Industrialization in China in the Collective Era

Chinese countryside did not experience modern industrialization until the revolution of 1949 due to its lack of capital accumulation (or, development finance), infrastructure, and human capital (see Appendix A). Starting with the first, we know that establishing modern industries requires significant initial investment in machinery, buildings, and auxiliary services. Both China's overall poverty and the Chinese state's lack of capacity to transfer the agricultural surplus to the industrial sector evidently put a formidable obstacle to modern industrialization in the cities and the countryside.

Second, a significant infrastructural bottleneck was evident especially in two key areas. Energy production and transport infrastructure, which are centrally important for industrialization, were inadequate. In 1949, the total electricity consumption in rural China was only 20 million kWh (kilowatt-hour), which was an insignificant figure and incapable of establishing mechanized industry. In the literature on Chinese economic history, the access to coal has been viewed as an important factor behind the industrial divergence of China and the West. For instance, Kenneth Pomeranz views the Yangzi Delta's distance from the coal sources of Northwestern China as a central factor behind its lagging behind England since the 18th century (Pomeranz, 2000; 2004, pp. 84-88). It is therefore

reasonable to take coal production into account in analyzing the obstacles to the industrialization of the Chinese countryside. The total coal production in China as a whole was 32 million tons in 1949, 43 million tons in 1950, and 53 million tons in 1951 (Guojia Tongji Ju Gongye Jiaotong Tongji Si, 1990, p. 83), an insufficient figure to support industrialization either in the cities or in the countryside. The country had only 22,900 kilometers of railways and 126,700 km of highways in 1952. River transportation was the only exception of this general picture of underdevelopment. China had 95,000 km of navigable waterways in 1952. This was due to imperial China's remarkable performance in utilizing inland waterways for transportation as exemplified by navigation on the Yangzi River and the Grand Canal. However, transportation through the Grand Canal declined swiftly since the beginning of the 19th century and this impacted the rural economy of North China adversely. Finally, Chinese villagers, even in the most advanced regions such as the Yangzi Delta and coastal Guangdong, were unhealthy and illiterate in the early 1950s (see Appendix A).

In sum, in the early 1950s rural China lacked the physical infrastructure and human capital that were necessary for a significant industrialization process. As I will show below, by mobilizing the labor and financial resources of their members, rural collectives provided assistance to the state to solve these bottlenecks.

Inter-sectoral resource transfers, capital accumulation, and rural industrialization

Setting up modern industries and developing industrial infrastructure required high levels of investment that necessitated larger-scale and more centralized planning and finance which was beyond the capacity of the rural economic units. Nevertheless, rural collectives covered a significant portion of this financial burden through financial transfers

and labor mobilization. First, as we will see below, rural collectives provided unpaid labor power to establish industrial infrastructure in their localities.

Second, they helped to develop the fiscal capacity of the state through mobilizing the agricultural surplus via direct taxation and price scissors. The ratio of central government revenues to GDP, which measures the taxation capacity of the state, remained very low, increasing from 3% in the late 19th century to only 5% in the Republican era, while the same ratio was between 12% and 17% in Japan at the beginning of the 20th century (see Appendix A). This problem was solved rapidly after the foundation of the PRC. Between 1952 and 1982, average annual tax to GDP ratio was 15.57% in China, a level similar to that of Japan during its rapid accumulation period at the beginning of the 20th century (Author's calculation based on State Statistical Bureau, 1983, p. 13, 446). People's Communes transferred 5.36% of their net income, in which farm income comprised the great majority, to the state in the form of tax (author's calculation based on Table 14). Agricultural tax comprised 28.77% of the total tax revenue of the Chinese state in the same period (author's calculation based on State Statistical Bureau, 1983, p. 13, 446). In short, by extending the reach of the state to the countryside effectively, rural collectivization increased agricultural sector's direct tax contribution to the state significantly.

As noted in Chapter 1, another important mechanism of inter-sectoral resource transfer in successful cases of economic development in the non-Western world was price scissors, which involved the state's deliberate underpricing of the agricultural prices vis-à-vis the industrial prices based on its power over the market. As I have examined above, the Chinese state established monopoly over rural trade between 1953 and 1957. Based on its

monopoly, it consistently underpriced farm prices and overpriced industrial prices, which boosted the profits and income of the SOEs in this period. Given the fact that the income of the industrial SOEs comprised 33.59% of the total state revenue between 1952 and 1982 (author's calculation based on State Statistical Bureau, 1983, p. 447), it is evident that in addition to its direct/visible tax contribution, agricultural sector also made an indirect/hidden but quite significant financial contribution to state-led industrialization via the price mechanism. In fact, the agricultural sector transferred 489.9 billion ¥ to the industrial sector via the mechanism of price scissors (author's calculation based on Sun & He, 2009, p. 7).

Finally and equally importantly, rural collectives repeated the same process of transfer for their own capital accumulation. As mentioned above, the Sixty Points document of 1962 required the collectives to allocate 3% to 5% of their net income to their public accumulation funds. Hence, after paying taxes to the state, collectives taxed their members for a second time in order to establish their accumulation funds. Since agricultural income was the main source of rural income in this period, doing this practically meant a second agricultural tax. Collectives spent a part of these funds to build the industrial infrastructures examined below and capitalize their small and medium-sized industries. Table 16 demonstrates the extent of this self-accumulation clearly. Based on this table, I calculate the Chinese collectives' average annual transfer to the collective accumulation funds and the state treasury between 1958 and 1981 as 6.25% and 5.36%, respectively. Taking into account the four missing years (1966-69) on the table, we can conclude that the extent of collective self-accumulation was at least equal to (if not greater than) their capital transfer to the state.

Table 16. Income Distribution in Rural People's Communes, 1958-1981 (Total Income=100)

Year	Expenditure	Distribution of Net Income			
		State taxes	Accumulation fund	Welfare fund	Members' income
1958	26.64	9.51	9.89	1.52	52.29
1959	26.77	10.00	10.32	1.79	50.70
1960	28.96	9.90	3.00	1.00	56.73
1961	26.70	6.41	4.20	1.98	60.10
1962	28.25	6.50	4.41	1.44	58.73
1963	28.31	6.54	5.15	1.52	58.14
1964	28.88	6.78	7.15	1.69	55.01
1965	28.18	5.60	6.56	1.43	57.29
1970	30.82	4.53	6.54	1.69	54.87
1971	30.13	4.44	5.85	1.70	55.93
1972	32.07	4.42	5.79	1.58	54.95
1973	31.30	4.29	6.53	1.65	54.80
1974	32.22	4.12	7.06	1.68	53.60
1975	33.61	4.02	7.48	1.76	51.48
1976	35.39	3.89	6.82	1.68	50.73
1977	35.59	3.80	6.48	1.62	51.42
1978	34.88	3.35	6.76	1.63	52.59
1979	34.12	3.23	7.06	1.75	53.12
1980	34.63	3.07	4.45	1.56	53.98
1981	34.41	2.93	3.56	1.36	59.17

Source. State Statistical Bureau, 1983, p. 210.

Note: Data on the first stage of collectivization preceding the establishment of the People's Communes in 1958 is not available. Data for 1966-69 is also unavailable.

These findings point to the historical sources of rural China's industrial miracle in the 1970s and 1980s. In addition to supplying a large amount of unpaid labor for developing industrial infrastructure, rural collectives also financed a significant portion of China's industrialization by forced savings including state taxes, price scissors, and public accumulation funds. While the first two transfers assisted state-led urban industrialization, the latter directly supported collective-led rural industrialization. As we will see below, SOEs provided crucial assistance to rural industries through supplying modern inputs and know-how and establishing subcontracting chains at least since the mid-1960s.

Overall, the transfer of the agricultural surplus to industry appears as a significant factor behind rural China's industrial miracle. The ratio of net foreign capital inflow to China's GDP was -0.7% in 1960-64, -0.5% in 1965-69, -0.6% in 1970-74, -0.2 in 1975-79, -0.8% in 1980-84, and -0.3 in 1985-91 (Chai, 1994, p. 507). In short, China was a net capital exporter between 1960 and 1990. As Chapter 4 will show, although India imported a significant amount of foreign capital through loan and aid packages in the same period, rural India came nowhere near rural China's level of industrialization partly due to the absence of a similar institutional structure enabling inter-sectoral resource transfers.

Development of coal mining in rural China

The first big push for developing coal mining in the countryside came with the Great Leap Forward. Tens of thousands of villagers were mobilized to explore new mineral deposits and after long and persistent effort they eventually found significant coal sources. The case of the Shifang county in Sichuan province exemplifies the progression of the process:

The county government asked each village in Shifang to recruit about seventy of its best, most capable young men and women for the new production front... It was the same in other communes and soon the county mobilized 12,000 people for the task... As they found relatively small quantities of ore the immediate results of the iron and steel campaign were disappointing... Nevertheless, for two years they persisted in this work, gaining technical knowledge and new skills in social organization. In the meantime while digging in the mountains they came across large seams of coal, limestone formations and high-grade phosphorus deposits. When local leaders realized the implications of these discoveries - their value for creating electrical energy, for home cooking, for construction materials and for chemical fertilizer - the way opened for a new advance... The Shifang railway project began to take shape (Endicott, 1988, pp. 52-53).

The Shifang county was evidently not an isolated case in this regard. The total coal production in China as a whole was 43 million tons in 1950 (Guojia Tongji Ju Gongye Jiaotong Tongji Si, 1990, p. 83). This figure reflects the total output produced by all types of coalmines in the country at that time. As Table 17 demonstrates, in 1958, rural coalmines

(*nongcun meikuang*), which were run by the collectives, produced 34 million tons of coal. This figure comprised 12.59% of total coal output of that year. The drop of coal production in the next two years shown by the same table reflects the severe shortage of food in the countryside, which inevitably decreased the number of people engaging with this physically demanding task. However, even the figures for these years are not negligible. In short, rural China's coal mining capacity increased significantly during the Great Leap Forward.

Table 17. The Output of Coal Mines Run by the Rural Collectives, 1958-1982

Year	Output (million tons)	% of Total National Output
1958	34	12.59
1959	28	7.59
1960	22	5.54
1967	8	3.88
1968	13	5.91
1969	18	6.77
1970	31	8.76
1971	32	8.16
1972	36	8.78
1973	42	10.07
1974	52	12.59
1975	57	11.83
1976	65	13.46
1977	79	14.36
1978	87	14.08
1979	98	15.43
1980	105	16.94
1981	117	18.81
1982	137	20.57

Source. Guojia Tongji Ju Gongye Jiaotong Tongji Si (State Statistical Bureau, Division of Industry and Transportation Statistics), 1990, p. 83.

As mentioned above, central government forced the rural collectives to restrict their non-farm activities in order to stabilize agricultural production during the recovery period. Since data is not available for 1961-66, it is not possible to find out to what extent coal production dropped further. We know that although many enterprises were closed down,

some were transferred to the county administrations (Yan, 2007, p. 61) and therefore counted as urban mining and industry in later statistics. Hence, the gains of the period were not washed away entirely. More importantly, since broad masses gained the experience of mining in the Great Leap years, they were certainly ready to step up production when these restrictions were lifted. With the start of the Third Front campaign in 1964⁴⁹ and Cultural Revolution in 1966, these restrictions were removed. Rural collectives returned to the business of mining by mobilizing labor and making investment out of their public accumulation funds. As Table 17 demonstrates, during the Cultural Revolution, collective-run coalmines increased their output by eight-fold. Coal output of these mines doubled between 1977 and 1982. As we will see in the next chapter, this sharp increase continued in the 1980s. In short, the mobilization of rural labor and financial resources by the collectives played a key role in the removal of one of the most important energy bottlenecks on rural industrialization in China.

⁴⁹ The “Third Front” campaign for the industrialization of the interior and western provinces was motivated by geopolitical considerations. Faced with the possibility of war with the US and the USSR, the Chinese leadership made a very radical decision of industrial relocation. Many enterprises were relocated to mountainous areas, which were much more protected from aerial bombardments than coastal regions. Chinese leadership launched an enormous campaign to relocate the heavy industries (and much of their personnel) from the coast to the interior and the west. On the other hand, the Third Front campaign was more than simple relocation. It also aimed to add a large number of new industries to these regions. Since the campaign prioritized military-strategic concerns over productivity and profitability, most of the Third Front enterprises were established in largely inaccessible regions lacking sufficient transport infrastructure. Hence, the campaign also included large investments in road and railway construction in the interior and western regions. Third Front construction absorbed about half of China’s capital construction investment between 1965 and 1975. This amount does not include the “Small Third Front” industrial investment financed largely by the rural collectives (Wen, 2012, pp. 65-66). Although it was decided due to geopolitical reasons, the Third Front campaign directly fitted the socio-economic goals of the Cultural Revolution era by industrializing the poor interior and western regions. Third Front campaign played a key role in the industrialization of rural China (Bramall, 2007, p. 12, 44, 330; Bramall, 2009, pp. 261-265; Wen, 2012, pp. 61-65).

Small hydropower stations and the electrification of rural China

Electrification was one of the central factors behind rural China's economic success. In 1989, total area irrigated by electric-powered machinery (265.88 million mu) comprised 39.46% of China's total effectively irrigated area (673.67 million mu) (Nickum, 1995, p. 113). Moreover, the development of modern industries in the countryside depended on electrification entirely. In the following decades, the Chinese government followed a version of its strategy of "walking on two legs" in the area of rural electrification. On the one hand, the central government invested heavily in centralized, large-scale, urban-based electricity production. This provided the great majority of electricity to the countryside as the grids were continuously extended from urban to rural areas. On the other hand, the government also emphasized the development of hydropower capacity as a means of rural electrification. The establishment of small hydropower stations became an integral part of the overall hydraulic construction in the countryside. Similar to water conservancy projects, rural collectives were able to construct small hydropower stations by mobilizing their labor and financial resources.

Between 1949 and 1962, 741 hydraulic stations (with a total capacity of 16,529 kilowatts) were established in Fujian province. The total cost of these investments was 15 million ¥. Rural collectives covered more than 70% of this cost. Almost every segment of the local population participated in this effort. In addition to able-bodied people carrying out the hardest tasks, even people over the age of 70 contributed to the construction effort by collecting wood, etc. People were called to contribute to the projects with their modest savings. Even the "five guarantee households," the poorest segment of the peasantry,

donated their chickens. These efforts resulted in the successful self-financing of the projects. The state subsidy comprised only 26% of the project cost in Minqing county, 25% in Yongan county, and 13% in Nanjing county. In Yongchun county, which gained nationwide reputation for its success in small-scale hydropower infrastructure, central government investment (12.5 million ¥) comprised only 33.7% of the total cost (35.4 million ¥) of the plant construction until 1983 (Fujian Sheng Difang Zhibianzhuan Weiyuanhui, 1999, pp. 158-159). Fujian reflected the nationwide trends in China. Collective mobilization remained to be the basic mode of hydropower construction in rural China until the early 1980s (Lei, 1984, p. 29; Pan et al., 2006, pp. 13-17). In 1949, small hydropower generation capacity of rural China was estimated to be somewhere between 2785 and 3630 kilowatts (Lei, 1984, p. 29; Pan et al., p. 13). This increased first to 227,400 kilowatts in 1962 and then to somewhere between 7.6 million and 8.08 million kilowatts in 1982 (Lei, 1984, p. 29; World Bank, 1985, p. 153). In other words, rural China's hydropower capacity increased by 2700 times between 1949 and 1981, and 33 times between 1962 and 1981 (Lei, 1984, pp. 29-30). The share of the small rural hydropower stations in China's total hydroelectric generation capacity increased from 16% in 1972 (Riskin, 1979, p. 56) to 35% in 1982 (World Bank, 1985, p. 153). By 1982, about 90% of the communes, 70% of the brigades, and more than 50% of the production teams had access to electricity (Lei, 1984, pp. 29-30; World Bank, 1985, p. 153). By providing electricity to about one-third of the counties and 40% of the communes in the same year (World Bank, 1985, p. 153), small, commune and brigade-operated hydropower stations accounted for a significant part the rural electrification success in the first three decades of the PRC. They provided a solid base for the development of agriculture and rural industry.

The development of transport infrastructure

Developing the transport infrastructure has been an imperative of rural industrialization everywhere. Due to the strong British investment in railways and highways, India had a significant advantage over China in the area of transportation in the early 1950s (see Appendix B). Similar to the cases of mining and hydropower examined above, Chinese rural collectives also assisted the development of transport infrastructure by mobilizing labor and financial resources of their members.

To illustrate the process, we can return back to the case of Shifang county. As we have seen, after two years of hard work 12,000 mobilized villagers discovered rich mineral deposits in the mountains. This discovery opened up the possibility of linking the region to the national railways network, which was realized, again, by collective mobilization:

The county dispatched squads to other areas to see how to build railways. They learned that for a narrow-gauge railway the rails could be cast directly from the pig iron they had already created. Soon thousands of peasants started working on the project, moving houses, grading the roadbed, building bridges and smelting crude iron into rails...*According to Deng, the peasant builders worked without wages, except for money which he called 'a subsidy of several yuan a month' for daily necessities. 'But they had their work-points recorded at home', he noted, 'and they still got their share of grain and cash distribution from their unit at the end of the year.'*... 'At that time', he said, 'the whole country took part in big projects so the movement earned us along in spite of the hardships, *the state didn't have to pay anything for the land occupied by the construction; labour was free and land was free. That's how we built the railway. It has no debts.'*...In less than a year locomotives began hauling freight out from the foothills; each engine could pull a load that would have taken a thousand peasants to carry on their shoulders (Endicott, 1988, pp. 53-54).

Table 18. Length of Transport Routes in China, 1952-1982 (1000 kilometers)

Year	Railways	Highways	Navigable waterways
1952	22.9	126.7	95
1962	34.6	463.5	161.9
1972	43.9	699.9	140.6
1982	50.5	907	108.6

Source. State Statistical Bureau, 1983, p. 299.

Table 19. Index of Freight Traffic in China, 1952-1982 (1952=100)

Year	Total	Railways	Highways	Waterways
1952	100	100	100	100
1957	255	207.5	285	303.3
1965	384.2	371.5	372.3	447.2
1982	785.3	859	598.7	862.3

Source. State Statistical Bureau, 1983, p. 307.

Similar methods of self-finance were used for road construction. For instance, in Shulu county of Hebei province, there were only two paved roads in 1970, with a total length of 72 kilometers. This road passed through only 11 of Shulu's 31 communes. The remaining communes had unpaved roads which worked relatively well only when there was not much rainfall or snow. A massive campaign for developing the road network was undertaken between 1970 and 1978. While the county government covered the entire cost of the main arteries and inter-county roads, it covered only the cost of the construction materials for the commune/township roads and paid nothing for the brigade/village roads. In other words, rural collectives self-financed a large part of their road construction by mobilizing their labor and financial resources. As a result, the length of paved roads rose to 216 kilometers and 12 more commune seats were connected to transport network (Blecher & Shue, 1996, pp. 180-181).

In short, the remarkably rapid development of transport infrastructure and the consequent increase in freight traffic (demonstrated by Tables 18 and 19)⁵⁰ during the collective era were achieved through the state-collective cooperation in which the

⁵⁰ The reduction of the length of navigable waterways after 1962 (shown on Table 18) was mainly due to the expansion of hydraulic facilities. Hence, it was a result of the prioritization of irrigation over river navigation rather than a declining capacity of infrastructure construction. On the other hand, as Table 22 demonstrates, the freight capacity of the waterways rose significantly despite the reduction of their length.

mobilization of the labor and financial resources of the villagers played a key role. As a result, one of the main obstacles to rural industrialization was diminished rapidly.

Development of human capital for rural industrialization

It is impossible to explain rural China's industrial success without taking into account of the development of its human capital in the collective period. This is evident in Li Bozhong's comment below in which the failure to recognize the human capital achievements of the collective era leads him to view the Yangzi delta's industrial achievements of the 1980s as a puzzle that can only be solved by going back to the pre-1949 era:

One of the most puzzling questions in the recent economic take-off in rural areas of Jiangnan is where was to be found the army of enterprising businessmen, capable managers, disciplined and skilled factory workers, farmers with initiative, competent white-collar workers and other persons who are essential to modernization? This question is also particularly important because there had been a *long-term 'brain-drain'* in rural Jiangnan: almost all the well-educated people left their villages for the cities before 1979. The only source of such persons is within the villages, among those who did not leave or, more accurately, did not have any means to leave. But it is these not well-educated peasants who constitute the economic miracle in Jiangnan. If we want to trace their talents, which seems to be innate, we have to admit that these talents are rooted in Jiangnan traditional culture (Li, 1998, p. 178, emphasis mine).

Of course, pre-1949 sources of human capital contributed to the Yangzi delta's economic development in the 1980s. On the other hand, Li's failure to recognize the obvious logical and empirical problems of his argument is quite striking. Even if we assume that older generations transferred their work culture and skills to new generations as much as possible, without the on the job training in rural industries and formal education in the following three decades, it might be impossible to raise a new generation of semi-skilled and skilled workers and managers who were capable to respond to the rising internal and external demand for Chinese industrial products in the 1980s. This logical point should have made Li reconsider his assumptions regarding the collective era. A deep knowledge

of regional history is certainly necessary but failing to recognize the developments of the 1960s and 1970s distorts the actual historical roots of the Yangzi delta's industrial success in the 1980s. Hence, this section aims to briefly examine the relationship between human capital development of the collective period and rural China's industrial success in the 1970s and following decades.

The previous section has already examined how the collective system successfully solved a major part of the human capital problem by improving the health of the villagers, boosting the literacy rate, and extending elementary and secondary education in the countryside rapidly. This section will take this analysis further by demonstrating the links between the healthy and educated labor force and rural industrialization. It will also analyze how increasing numbers of industrial workers and managers developed their skills since the Great Leap Forward thanks to higher state authorities' efforts to increase the skill level of the rural cadres by frequent training and the expansion of training at the shop floor (or learning by doing) in tandem with the expansion of rural industrialization.

Although traditional rural handicrafts that flourished in the periods of economic dynamism in the prerevolutionary era during which rural labor force was largely illiterate, the transition from handicrafts to modern industries required the spread of literacy and formal (elementary and secondary) education in the countryside. One resident of Wujin county in southern Jiangsu, one of the most industrialized rural regions of China, explains the role of education in the foundation of the commune and brigade enterprises precisely:

The educational level increased so that people could use technology...In the past, some rural people did not even go to the township town. After rural education improved, people communicated more with the outside world. I weaved after I saw you weaved; I forged iron after I saw you forged iron. Such was the process of social progress...Right after the Liberation, the traditional five craftsmen were active and had access to a lot of information. Up to the [market] reform, however, such *information exchange spread to the entire population* (Zhan, 2013, pp. 179-180).

The director of a shoe accessory factory in a village in the same county, who started the industrial work as a peasant technician in the collective era, emphasizes the technical contributions of rising rural literacy:

During the period making plates, I learned to read books. I graduated from middle school and *consulted books whenever I encountered a problem*. Therefore, people came to me for help when the village's tractors or engines broke down, or there were other problems. The education level here was very high. Now it is high school on average. Back then most of us graduated from middle school. There were a small number of elementary school graduates but *few illiterates* (Zhan, 2013, p. 180, emphasis mine).

Hence, it is no coincidence that in every rural region of China, literate villagers with some elementary and secondary education comprised an increasingly larger part of the industrial labor force. On the other hand, much of the skill formation and diffusion in rural industry happened through learning by doing. In its quest for reducing the gap between the city and the countryside, the Maoist leadership constantly tried to increase the transfer of industrial and managerial know-how from the cities to the countryside. This transfer had taken several forms. First, administrative and technical personnel at the county level organized training programs for the rural cadres and ordinary villagers. As we have examined before, most rural cadres, including the ones in the relatively advanced areas, lacked basic accounting and book keeping skills in the early 1950s. Training programs helped to solve this problem. The Qidong commune of Dongtai county of Jiangsu provides us a good example of this process. The first wave of cadre education started with the transition to the advanced cooperatives in 1955. All cooperative accountants were trained at the county seat. Following the political education sessions of the first three days, accountants attended several training sessions. Each session lasted three days and focused on a particular type of accounting (Li, 2009, pp. 36-37). With the start of the Cultural

Revolution, the scope of accounting and book keeping education was broadened from the cadres to the masses:

Although team members lost interest in political study, they showed genuine enthusiasm for attending the “political night school”...which was created *in each production team* in the late 1960...All illiterate villagers *had to attend* the school that was open in the winter...The class also taught the team members how to read and write their names, the names of ordinary farm tasks, Arabic numerals, and arithmetic...As a result of their attendance for several winters, most team members, male and female, were able to check the team’s work-point accounts or keep their own daily work records. *Some villagers who owned a store or factory in the 1990s attributed their abilities to keep books or operate machines to the night school that they attended 30 years ago* (Li, 2009, p. 162, emphasis mine).

Second, the central government’s insistence on transferring urban talent to the countryside supported the same endeavor significantly. As we have seen, about 40 million students and state employees were sent to the countryside between 1960 and 1978. In contrast to the rusticated youth, technical cadres did not spend many years in the villages and returned back to the cities after the end of each economic crisis. Nevertheless, after 1965-66, the central government insisted to rotate them between their urban and rural appointments and millions of cadres spent a substantial amount of time in the countryside. We should also remember that Third Front campaign did this on a larger scale in the interior and western provinces. In sum, a massive transfer and diffusion of industrial know-how took place in rural China from the mid-1960s to 1976. Along with the urban-rural skill diffusion, another significant diffusion process took place within the collectives with the active participation of the villagers. As agricultural machinery workshops and repair stations flourished in tandem with rapid farm mechanization, they became centers of industrial learning by doing which prepared the ground for industrial diversification. For example, in a village of southern Jiangsu,

As early as 1961, the electric grid reached the village and peasants started to use electric power. The village purchased more than 50 small machines in the 1960s for threshing and winnowing rice and wheat. A more important change came in 1966 when H commune awarded the village a tractor for its good performance in agricultural production. After that,

it purchased more tractors for farming and transportation, and the number of tractors reached 11 by 1970. The increasing use of agricultural machines raised the need to train peasants. The brigade sent peasants to cities to learn skills or invited urban technicians to teach peasants in the village. In most cases, however, peasants taught themselves to use and repair the machines by trial and error. *The workshop in the village had become a training ground for a number of peasant technicians. In 1977, the village established a shoe accessory factory based on these peasant technicians.* In the following years, with the help of hired urban workers, they invented new techniques making color-painted metal shoe accessories, which made the factory *the biggest and most profitable industrial enterprises in the village during the 1980s and 1990s* (Zhan, 2013, p. 153, emphasis mine).

Of course, trial and error process inevitably included many errors and failures.

However, people learned from them and the seeds of future success were sown. We have already seen how the villagers of Sichuan learned better methods to construct railways during the Great Leap Forward. Similarly, by learning from their mistakes, rural cadres became more capable of managing non-farm enterprises in the 1980s. In the following description of the business trajectory of a former brigade leader, a Guangdong villager explains this point precisely:

He knew the enterprises, he knew how to handle a business, he knew officials, he knew the banks and how they operate. Compared to everyone else in the village, he was used to dealing with things on a big scale...By the end of the 1970s [he] hadn't had much success with the collective enterprises...But he learned about business through his mistakes...and that's now benefitting him in his private ventures (Chan et al., 2009, p. 313).

In addition to skill diffusion, this process also led to the spreading of subcontracting relations between urban and rural industries. Rural industries received modern inputs from the urban SOEs, learned how to use them efficiently with their technical training and assistance, and then sold their products back to the SOEs, which used them as inputs. This enabled the rural industries to move from handicraft production to the mechanized production (Oi, 1989, pp. 13-42; Zhan, 2013, p. 157).

Another mechanism of skill diffusion was the contract worker system since the mid-1960s in which county SOEs signed contracts with the communes to hire their members as workers. This was a mutually beneficial arrangement. Since contract workers

retained their rural residency, county SOEs could fire them anytime and were not obligated to provide social security benefits to them. Their wages were also lower than the workers having county (urban) residency. Hence, county SOEs found the system very profitable. Despite this significant urban bias of the system, young villagers were also enthusiastic to participate because even lower wages paid (in terms of cash or work points) by these enterprises were higher than the average work points earned by collective members. As a result, contract worker system continuously expanded. In the 1970s, about 10 million rural residents were employed as contract workers in construction and industrial sectors in urban China (Chan & Xu, 1985, p. 608; Selden, 1993, p. 175). Since China's urban labor force was 81.98 million in 1975 and 99.67 million 1979 (State Statistical Bureau, 1983, p. 120), it can be estimated that about 10% of the workers in urban areas were rural contract workers. Since they were mostly employed at the county level, it appears that this ratio was much higher in the counties. For instance, in Shulu county of Hebei province, contract workers comprised more than half of county-run industries in 1978 (Blecher, 1988, p. 112; Blecher & Shue, 1996, p. 110). It became an early experiment with the use of rural labor force in urban industries, which marked the industrial expansion of many urban (or rapidly urbanizing) regions, especially in coastal China but also in the interior areas in the 1980s.

Table 20. The Growth of Commune and Brigade Industrial Output, 1962-1978 (% per year, 1980 Prices)

Province	1962-71	1971-78
Fujian	4.7	12.1
Guangdong	5.1	24.1
Hebei	18.2	27.8
Henan	21.4	28.7
Hubei	4.7	16.6
Hunan	11.5	13.9
Jiangsu	17.5	30.6
Ningxia	5.5	16.4
Shanxi	9.5	17.4

Sichuan	17.0	18.7
Zhejiang	13.7	21.1
China	5.9	23.5

Source. Bramall, 2007, p. 23.

Finally, thanks to the policies of the era, the geographical and social scope of rural industrialization was quite broad. The Third Front campaign helped the industrialization of the previously unindustrialized interior and western regions. As a result, although the prerevolutionary industrial legacies and the opening up to the world economy inevitably moved the coastal regions to the forefront of rural industrialization in the late 1970s and 1980s, large areas in the interior and the west also acquired a respectable industrial basis, which enabled them to continue participating in the economic development process in the 1980s and later on. As Table 20 clearly demonstrates, the output of the commune and brigade enterprises rose very rapidly in the 1960s and especially the 1970s, not only in the coastal provinces (Fujian, Guangdong, Jiangsu, and Zhejiang) but also in the interior and western provinces (Hebei, Henan, Hubei, Hunan, Ningxia, Shanxi, and Sichuan). Overall, industry comprised 19.48% of the total rural output in 1980 (Zhonghua Renmin Gongheguo Guojia Tongji Ju, Nongcun Shehui Jingji Tongji Si, 1986, p. 25). The number of employees in commune and brigade enterprises increased from 17,698,000 in 1976 to 28,265,000 in 1978 (Yan, 2007, p. 64).⁵¹ Also, although rural industries were not entirely exempt from nepotistic practices, rural industries across the country strived to achieve the

⁵¹ We have already seen that the growth of urban industries did not bypass the countryside and supported rural industrialization in several important ways. Industrial enterprises run by the county governments were especially important in this respect because of their proximity to villages and hiring of close to 10 million rural contract workers. Hence, although this chapter followed the majority of the literature and focused only on the commune and brigade enterprises, there are legitimate reasons to count the county SOEs as part of the industrialization of rural China. Total number of employees in collective and county enterprises was over 43.4 million in 1982, comprising more than half of the national industrial workforce of 83.3 million (Bramall, 2007, p. 35).

goal of making one industrial worker per rural household and hiring the young members of the poor families before hiring people from better-off households.⁵²

The Weaknesses of the Collective System

We have so far focused on the strengths of the collective system with regard to rural economic development. On the other hand, since this system greatly increased the power of the state even at the lowest levels of the countryside, the policy miscalculations and faulty schemes of the state leaders and officials impacted China's rural economy very negatively in a few years. This was unthinkable in India where the state's lack of capacity prevented the implementation of ambitious programs no matter whether they are well or ill conceived. The Great Leap Forward was such an episode in which faulty plans that were implemented compulsorily led to a catastrophe that took about 30 million lives and led China's rural economy to a collapse. Although the GLF catastrophe reflects the structural weaknesses of the collective system, we should remember that these weaknesses never reached serious proportions in other periods of the collective era.

Among various reasons of the formulation of the GLF strategy, two appear especially important: a. Cold War geopolitics and b. the Chinese leadership's extreme degree of optimism regarding the country's economic short-term potential. The geopolitical environment surrounding the PRC was especially unfavorable in the 1950s.

⁵² For instance, in a commune in southern Jiangsu "the allocation of jobs was supposed to follow the pro-poor principle. In 1963, H commune organized three cooperatives and it announced that it would recruit workers from three groups of peasants: (1) sending-down workers; (2) poor households that were only engaged in agriculture; (3) peasants who had skills related to the cooperatives. Three cooperatives recruited about 2500 peasants, among whom at least two hundred workers came from the Jiangsu village. The pro-poor principle was not only implemented at county and township levels, but also at the village level." A worker in this region recalls: "I got the factory job very late because the poor got jobs first. Their households did not have much income, so collectives offered them into factory jobs... We were so-so, better than some people. That is why I got into the factory late" (Zhan, 2013, p. 185).

Immediately after the end of the civil war, the newly established PRC entered into the Korean War in 1950. During the war that lasted three years, the PRC fought against seventeen countries including the United States. Among 1,340,000 Chinese troops who fought in Korea, 140,000 soldiers died and 250,000 soldiers were wounded or disappeared (Wen, 2012, p. 39). In addition to the Korean War, the Taiwan question and the Vietnam War made the US-China relations extremely tense. Between 1953 and 1958 the US threatened China with nuclear attack seven times (Endicott, 1988, p. 45). For Mao Zedong, this geopolitical challenge required China to adopt an aggressive economic strategy. In 1958, he stated that: “In the past others looked down on us...mainly because we produced too little grain, steel and machinery...until we’ve made thirty million tons of steel . . . and three-and-a-half billion catties of grain...When we’ve achieved this, then we shall be able to negotiate with the Americans with a bit more spirit” (Endicott, 1988, p. 44). On the other hand, China’s capital scarcity posed a formidable obstacle to the achievement of this goal. The Soviet financial assistance relieved this problem to a degree in the 1950s. However, as it became increasingly clear that in contrast to some of the East European regimes, the PRC was not going to accept becoming satellite of the USSR, and so the two countries’ relationship started to deteriorate. The Soviet economic assistance as a whole ended completely in 1960 but China received the first signal of this outcome a few years earlier, with the sudden halt of the Soviet loans in 1957 (Wen, 2012, p. 48). In short, by 1957, Chinese leaders had already agreed that the country had to industrialize very rapidly based on its internal sources.

This brings us to the second main cause of the formulation of the GLF strategy: Chinese leaders’, especially Mao Zedong’s extreme optimism regarding the country’s

capacity in the short run.⁵³ In addition to its largely successful military campaign in Korea, which led to the US troops' retreat back to the 38th parallel in 1953, the Chinese leadership also successfully transformed the entire economic structure through the nationalization of the industrial sector and the collectivization of the rural economy. The Chinese economy developed rapidly between 1950 and 1957. These developments gave the leadership an extremely high degree of confidence, which led to the shelving of the draft of the second five year plan (1958-1962) produced by the Minister of Commerce, Chen Yun, which conceived a more balanced strategy and emphasized agriculture, light industry, and foreign trade. Instead, the CCP adopted the Great Leap Forward (GLF) strategy, which aimed to transform China into a major industrial nation within less than fifteen years (Bramall, 1993, p. 281; Endicott, 1988, p. 46; Shen & Xia, 2011).⁵⁴

The GLF strategy led to three important developments in rural China. First, the advanced APCs were reorganized under the "people's communes" (*renmin gongshe*), which remained as the formal name and framework of the rural collectives until 1984.

⁵³ It is necessary to keep in mind the fact that Deng Xiaoping and Liu Shaoqi, two leaders that were expelled from the party at the beginning of the Cultural Revolution, were ardent supporters of the GLF (Bramall, 2011, p. 1004; Li, 2008, p. 46).

⁵⁴ Mao's extreme optimism regarding China's economic potential is revealed by his frequently changing upward revisions of the production targets. On 15 April 1958, he stated: "China could catch up with Britain in ten years, and with the United States in another ten years. We have already left leeway of five to seven years when we proposed the slogan 'to catch up with Britain and the United States in 25 or more years.' The slogan 'to catch up with Britain in 15 years' remains unchanged." In a meeting of the Central Military Commission on 21 June 1958, Mao made an optimistic update of these goals: "By 1962, we should be able to produce 60 million tons of steel, closer to that of the Soviet Union. As to surpassing that of the Great Britain, it won't take long. It won't take 15 years. We should be able to overtake Britain in three years, and overtake the United States in ten years. I'm pretty sure." Then the next day (22 June), in his speech on the report written by the director of the State Economic Commission, Bo Yibo, Mao claimed that: "It won't take 15 or seven years to overtake Britain. We should be able to do it in two or three years. It is quite possible in two years. The key is the output of steel. If our steel output reaches 25 million tons in 1959, we surpass Britain in steel output." Then the next day (23 June), he stated: "By 1962, we can produce 75-80 million tons of steel. So we don't need five years to catch up with Britain, two or three years will do. In five years we can catch up with the Soviet Union, and in seven years, ten at most, we can catch up with the United States" (Shen & Xia, 2011, pp. 865-866). These speeches clearly show that Mao's relationship with material realities seriously weakened on the eve of the Great Leap Forward.

Second, although collectives had mobilized labor in infrastructure projects since the establishment of the mutual aid teams, following the foundation of the people's communes, the first nationwide mobilization effort started. Third, commune and brigade enterprises (*shedui qiye*), which remained the formal name and organizational framework of rural industries until 1984, were also founded at the same time. As the following sections will show in detail, these efforts led to significant positive developments in agriculture, industry, healthcare, and education in the following years. Despite these successes in the long run, however, the Great Leap Forward ended up with a large decline of the economic output. Per capita GDP decreased from \$690 in 1958 to \$686 in 1959, \$662 in 1960, \$553 in 1961, and \$550 in 1962 (Maddison Project Database, 2013). In addition to this economic fiasco, it also led to one of the worst famines in history, which caused 30 million “excess deaths.”⁵⁵ In short, the great leap ended with a great failure.

Among numerous factors behind this failure, three main factors appear especially important. First, extremely unfavorable weather conditions between 1959 and 1961 affected the agricultural output negatively. According to an authoritative account of the impact of weather on agricultural production in China during the 20th century, weather-induced yield losses accounted for 75% and 95% of the total grain *yield decline* in 1960 and 1961, respectively (Kueh, 1995, pp. 152-153).

On the other hand, although it was an important factor, weather alone cannot explain the famine. At a general level, what led to the economic collapse and the famine was the sudden disappearance of realistic economic planning and the resulting organizational chaos (Bramall, 1993, p. 336). Two important human-made factors

⁵⁵ Excess death refers to actual deaths subtracted by the number of deaths that would have occurred under normal conditions (Bramall, 2011, p. 990).

stemming from the lack of economic planning impacted the agricultural production significantly. The first factor was the sudden drop in sown area from 133.63 million ha in 1957 to 127.61 million ha in 1958 and 116.02 million ha in 1959 (Kueh, 1995, p. 216). Unfortunately, by making a record high grain harvest (200 million tons) possible, the exceptionally favorable weather conditions in 1958 created an utopian atmosphere in which everyone believed that the reduction of the sown area would not harm agricultural output. This false belief led to two disastrous policies. First, the entire rural population was mobilized for rural industrialization. This policy involved different activities including the production of iron and steel in backyard furnaces, establishing other rural industries, and exploration of mineral deposits. Although as noted before the last two activities brought important industrial gains in the long run, backyard furnaces, the most promoted type of rural industry of the era, failed to produce good-quality iron and steel and led to extreme levels of waste (Bramall, 1993, p. 321; Endicott, 1988, p. 52; Meisner, 1977, p. 230).⁵⁶ On the other hand, apart from the pros and cons of each industrial activity, the industrialization effort was problematic because it was based on a total disregard of the risks involved with the abrupt and massive transfer of the labor force from farming to manufacturing and mining. This played a direct role in the sharp drop in the sown area. The false assumption that very close planting of the seeds and very deep plowing of the soil would lead to bumper harvests despite the reduction of the sown area was also common. As a result of these two disastrously utopian beliefs, total sown area was reduced to a dangerously low level in 1959. As the weather conditions turned from extremely favorable to unfavorable and

⁵⁶ Although the waste of capital and labor in ill-conceived iron and steel projects started before the Soviet personnel's departure of China in 1960, the latter event made things even worse in this respect (Wen, 2012, p. 56).

therefore reduced yields, the combination of the drops in the sown area and yield lowered grain output significantly in 1959, 1960, and 1961 (Table 21). In 1961, per capita calorie intake was only 1439 calories per day (FAO, 2014). Death rate rose to a dramatically high level in 1960.⁵⁷ Hence, unrealistic plans that were made without any serious consideration of land and labor requirements paved the way for a disastrous famine.

Table 21. Grain Output and Death Rate in China, 1957-1962

Year	Grain Output (10,000 tons)	Death rate (per 1000 people)
1957	19,505	10.80
1958	20,000	11.98
1959	17,000	14.59
1960	14,350	25.43
1961	14,750	14.24
1962	16,000	10.02

Source. State Statistical Bureau, 1983, p. 105, 158.

Finally, as a result of the unrealistically high predictions of grain harvest, the central government set high grain procurement quotas for 1959. Although grain production decreased from 200 to 170 million tons, net state procurement increased from 42.73 in 1958 to 47.57 million tons in 1959 (Kueh, 1995, p. 216). A well-functioning communication system would undeniably make the higher state authorities aware of the sharp drop in agricultural output and therefore reduce the procurement quotas. However, since the GLF campaign started with unrealistic assumptions and hopes, a tendency of grossly inflating the production figures prevailed at every level of the bureaucratic hierarchy. Hence, the production teams and brigades were forced to deliver high quantities

⁵⁷ On the other hand, we should pay attention to the fact that the highest death rate observed in China (25.43 in 1960) was the same with the average death rate in India between 1950 and 1955 (25.5). Moreover, China's death rates immediately before and after the GLF (10.80 in 1957 and 10.02 in 1962) were much lower than the Indian rate of 19.9 in 1960-65 and 17.3 in 1965-70 (United Nations, 2009, p. 276; all figures are for per 1000 people). In fact, "India seems to manage to fill its cupboard with more skeletons every eight years than China put there in its years of shame" (Drèze & Sen, 1989, p. 215). On this point also see Patnaik, 1995, p. 99.

of grain at the expense of the villagers' survival (Bramall, 1993, p. 302; Endicott, 1988, pp. 58-59).⁵⁸ Although the grain delivery quota was reduced significantly (from 47.57 to 30.90 million tons) in 1960, the inflated figures had already led to a massive famine in 1959.⁵⁹

Overall, then, the combination of unrealistic planning and bureaucratic commandism produced ill-conceived policies in areas of land use, labor allocation, and state extraction. Combined with the extremely unfavorable weather conditions of the 1959-1961 period, these factors led to one of the worst famines of history. As a result, Chinese countryside made a great leap backward temporarily.

On the other hand, the state leaders took some important lessons from the catastrophe they created. Starting in 1962, four important policies were adopted rapidly. First, collective units were downsized through increasing their numbers. Second, the basic

⁵⁸ As has been mentioned, leadership was a very important factor in the development performance of different rural regions of China in the collective era. It also appears to be a crucial factor that determined the life and death of millions of Chinese peasants during the GLF. While the provincial leadership's extremely adventurist and extractive policy led Sichuan to have the highest famine casualties (the estimate of famine deaths in the province is between 8 million and 15 million people) (Bramall, 1993, p. 298; 2011, pp. 995-1003), the cautious attitude of the provincial leadership regarding crop deliveries saved Shaanxi from famine (Vermeer, 1988, p. 308).

⁵⁹ There were three other problems. First, household plots, which comprised about 7% of all cultivated land in 1958, were virtually eliminated as a result of the extreme communization drive (Meisner, 1977, p. 236). This prevented the villagers to grow crops for self-consumption and harmed food security. Second, overconsumption of grain became a general tendency. During the GLF, in order to socialize the household-based reproduction activities for the sake of liberating women and allocating more time for productive activities, dining halls were established in the collectives. Since the peasants were mobilized in demanding tasks such as infrastructure construction, for good reasons commune cadres recommended them to eat well. More importantly, peasants also shared the false belief that there will be abundant food for all. Hence, overeating became common in 1958 and 1959. As a result, grain reserves were quickly depleted. Coupled with the elimination of household plots, it removed the cushion against the sharp drop in grain output between 1959 and 1961 (Chan et al., 2007, p. 25; Huang, 1990, p. 273). Finally, the problem of labor remuneration impacted villagers' work motivation negatively. Rather than leaving the basic accounting and income distribution to the teams, which were small enough to supervise and remunerate labor relatively easily, the rural policy of the GLF era made the brigade (and in many cases, even the commune) the basic accounting unit. This was directly related to the extremely optimistic atmosphere of the era, which led the Chinese leaders believe that all commune members would work enthusiastically with a high level of political consciousness and therefore the free-rider problem would not appear. In stark contrast to this belief, commune and brigade accounting led many peasants to expect others to cover the losses and feed the community as a whole (Chan et al., 2007, pp. 25-26; Potter & Potter, 1990, p. 72), which made a downward pressure on agricultural output.

accounting unit was restored from the commune and brigade back to the production team. Despite the temporary campaigns of the radical Maoists during the Cultural Revolution to adopt brigade accounting, team accounting remained dominant. By strengthening the link between the work effort and income, team accounting made a positive impact on labor productivity. Third, the teams were allowed to organize work according to their specific requirements. They became freer to divide and subcontract their tasks to small work groups made of a few households.⁶⁰ This helped to remove many of the obstacles on product specialization and non-farm diversification. Finally, households were allowed to cultivate their private plots and trade their produce in rural markets. Similar to team accounting, household plots and production endured in the following two decades despite temporary campaigns against them. These measures helped the rural economy to recover swiftly. In 1965, grain output reached its level in 1957 (State Statistical Bureau, 1983, p. 158).

Two other features of this recovery period deserve attention. First, many of the rural industrial enterprises that were established during the GLF were closed in 1961 and 1962. The central government forced the collectives not to undertake new industrial initiatives during the recovery period in order to stabilize grain production (CCP Central Committee, [1962] 1980, p. 134; Yan, 2007, 63; Zhan, 2013, pp. 150-151; Zhang & Zhang, 2001, pp. 37-38). Second, although some of the regional mobilization efforts continued, the central government did not carry out a nationwide campaign to develop rural infrastructure during this period for the sake of stabilization.

⁶⁰ “In order to facilitate the organizing of production, the production team may set up fixed or temporary work teams, according to localities, and contract work may be subscribed by period, by season or by the whole year, so that a rigid responsibility system may be established. The system may apply to stockbreeding, forestry, fisheries and other sideline production and also to the administration of draft animals, farm tools, irrigation and other properties. The production team or individual may be subjected to such a system” (CCP Central Committee, [1962] 1980, p. 142).

On the other hand, the state and collective cadres did not compromise the rural mobilization strategy. Long-term and large-scale mobilization of labor and financial resources of the villagers continued in the aftermath of the economic recovery in 1965. As a result, although the Indian countryside did not experience any catastrophe similar to the GLF, the continuation of the mobilization strategy enabled China's rural economy to develop faster and geographically broader than its Indian counterpart.

Conclusion

This chapter has provided a detailed analysis of the collectivization process and the contribution of the collectives to rural China's economic development between 1952 and 1982. It has demonstrated that by mobilizing labor and financial resources of the entire rural population, collectives enabled the Chinese state to develop agricultural and industrial infrastructure and human capital in the populous and vast countryside with a rapid pace and broad social and geographical scope that was beyond its limited fiscal capacity. During this period, although two grave economic mistakes of the Chinese leadership, the ill-conceived Great Leap Forward and the neglect of population planning until the late 1970s, put significant downward pressure on rural economic development, rural collectives' remarkable performance over three decades resulted in significant increases in both total and per capita output in rural China. As a result, China's rural economy reversed its long economic decline decisively. All this occurred *before* the market reforms of the post-1978 period. As we will see in the next chapter, rural China's economic success in the 1980s was based significantly on the material gains and institutional legacies of the collective era. As will become clear in Chapter 4, when we examine rural development in India in the post-independence era, collective-led labor and financial mobilization in rural China

between 1952 and 1982 is the main source of the divergence of the rural economies of China and India during this period.

III. RURAL CHINA'S COLLECTIVE LEGACY AND ECONOMIC DEVELOPMENT IN THE 1980s

The 1980s was a decade of spectacular economic success for rural China. Between 1980 and 1989, agricultural labor productivity increased by 4.09% annually (Fan & Chang-Kang, 2005, p. 139). The compound annual growth rate of the Township and Village Enterprises (TVEs) was 19.31% between 1978 and 1990 (author's calculation based on Bramall, 2007, p. 56). The rapidity of rural economic development in China in this decade does not have any parallel in the Global South including India in the entire post-1950 era. In this chapter, I will point out to serious limitations of the conventional explanations that attribute this success to the transition to the Household Responsibility System (i.e., agricultural decollectivization, HRS hereafter) and privatization. Given the fact that the dominance of collective farming ended in 1982 and the transition to the HRS was completed at the end of 1983, rapid agricultural growth rates between 1978 and 1984 cannot be explained by the decollectivization variable. Similarly, Township and Village Enterprises run by the township (former commune) and village (former brigade) governments employed 59.4% and 49.5% of the industrial labor force and produced 73.09% and 65% of industrial output in 1985 and 1990, respectively, rural China's industrial success in the 1980s cannot be explained by the privatization variable. Although these points on the lifespan of the collective system provide us sufficient empirical basis to criticize the economic liberalization thesis, they do not explain how the collective

organization helped to create this economic success. This is what this chapter aims to accomplish.

In this chapter, I will argue that rural China's economic achievements in the 1980s are closely linked to and largely the products of the *legacy* of the collective system that is examined in the previous chapter. The legacy of the collective system refers to two things. First, it refers to all tangible gains handed down by the pre-HRS period. As we have seen in the previous chapter, based on the mobilization of labor and financial resources of their members, rural collectives created a strong infrastructure (irrigation, drainage, electricity, and transport facilities and networks), capital (farm machinery, factories, workshops, and mines), and human capital (a healthy and relatively educated and skilled labor force). As a result, much of the fundamental bottlenecks of economic growth had already been removed *before* the market reforms. Second, the collective legacy also refers to economic organization. Agricultural decollectivization did not wash away the collective organization of the rural economy. As we will see below, collective forms of economic organization remained strong in both agriculture and industry. In rural industry, local government ownership and management continued without interruption. The same cadres who developed their management skills in the CBEs until 1984 stayed in charge of the TVEs in the second half of the 1980s. Contrary to the conventional wisdom assuming that a purely private and household-based farming system emerged after the transition to the HRS, decollectivization did not amount to outright privatization in the agricultural sector. A semi-collective/semi-private farm organization prevailed in the 1980s. Local governments continued to organize mechanized farm operations, which prevented a possible reversal of farm mechanization that might be caused by the decrease in the scale of production.

Although the transition to the HRS gradually undermined the local governments' capacity of mobilization, township and village administrations as well as the small villager groups (*xiaozu*, that replaced the former production teams) continued to mobilize labor and financial resources of the peasants for maintaining the hydraulic infrastructure. Similar to the communes and brigades they replaced, township and village governments were also capable to use the funds generated by one part of the rural economy to support the other. Although the central government investment in irrigation remained low throughout the 1980s, local governments used a part of the TVE profits to make up this deficit, which helped to prevent China's irrigated acreage from falling. Moreover, similar to the collective period, the central government retained a high degree of control over the peasants' crop choices and marketing through the mediation of township and village administrations. In short, the collective legacy played a key role in rural China's economic success in the 1980s.

This chapter comprises seven sections. After this introduction comes the second section which briefly examines the implementation of agricultural decollectivization in China between 1979 and 1984. Contrary to the conventional wisdom in the Chinese and Western journalistic and academic accounts, it will show that decollectivization was a top-down policy imposed by the party-state uniformly upon the entire countryside rather than a bottom-up peasant movement. We will also see that hesitancy and even outright opposition to decollectivization was more common than it is usually assumed. The third section focuses on the regional and national pace of the transition to the HRS. The fourth section examines the sources of agricultural growth in the 1980s. It shows that the temporary spike of agricultural growth rate between 1978 and 1984 was not strongly

related to decollectivization and actually a product of the combination of the previously created irrigation infrastructure, significant procurement price increase, sharp rise of the supply of chemical fertilizers, and favorable weather conditions. The section then examines the reasons of the agricultural stagnation during the rest of the decade. After that, it identifies the specific links between collective organization and agricultural growth by analyzing the collective organization of mechanized farm operations and other parts of the production process, the mobilization of labor and financial resources of the local populations for infrastructural works, and agricultural trade. It shows that the element of collective organization in agriculture of the 1980s was much more significant than it is usually assumed in the literature.

The fifth section examines the trajectory of human capital development in the countryside. It shows that rural healthcare and education suffered from a temporary setback in the 1980s due to the privatization of the education and healthcare services provided by the rural collectives before. However, we will see that the combination of government spending, the use of the TVE profits, and rising per capita income prevented a significant decline in rural healthcare and education. Moreover, this section will also show that the expansion of rural industrial employment in the 1980s played a key role in the continuation of skill diffusion among the rural labor force. The sixth section focuses on the sources of rural industrial development in the 1980s. It demonstrates that the replacement of the CBEs with the TVEs in 1984 did not cause the local governments to lose control over the rural industry. The same cadres remained in charge of the enterprises. As we will see below, even in cases in which the enterprises were leased out to individuals, township and village governments remained to be the main decision-makers in key areas

including employment, investment, and the use of the profit. Close links between the county, township, and village administrations in economic affairs, a characteristic of the pre-1978 economy, continued in the 1980s. Given the fact that industry's contribution to rural economy was greater than agriculture in the 1980s, this organizational legacy handed down from the collectives appears to be a key factor to explain the economic achievements of the 1980s.

Peasant Support for and Opposition to Agricultural Decollectivization in China

One of the conventional arguments regarding agricultural decollectivization in China is that it was a bottom-up peasant movement, which eventually led the CCP leadership to recognize the benefits of decollectivization and then promote it nationwide. The standard account in the official Chinese press, which has been accepted by the majority of scholarly works in China and the West, claims that the decollectivization process started with an illegal (and therefore secret) peasant initiative in Xiaogang village of Fengyang county of Anhui province. According to this account, Xiaogang peasants had been suffering from hunger and hardship due to the inefficiency of collective farming for many years. On a night in December 1978, 18 households of a production team in the village signed (with their blood) a secret contract that divided the team's land among households. Households then became solely responsible for the production on their land. After paying the tax and fulfilling the crop delivery quota as a team, each household could keep the surplus for themselves. As the story goes, this secret reform resulted in an immediate production miracle. The crop output rose by four times in a single year. The news about this miracle spread to other parts of rural Anhui and triggered a bottom-up peasant revolution to abolish the collective system. Soon after, the provincial party secretary, Wan

Li informed Deng Xiaoping about the peasants' enthusiasm for transitioning to household farming and the resulting increase in agricultural production. On 31 May 1980, Deng embraced the action of the Anhui peasants. Under his leadership, the party-state promoted the transition to decollectivized, family farming nationwide under the framework of the Household Responsibility System. Since the Chinese peasants were not satisfied with the collective system, they willingly followed the party-state guidance. As a result, with the completion of the transition to the HRS in late 1983, Chinese peasants were freed from the chain of the collective system and quickly became more prosperous (Bruce & Li, 2009, p. 132; China Daily, 2014; He, 2011, p. 2; Joseph, 2014, p. 262; Lin, 1988, p. 201; Eckholm, 1998; Yu, 2009; Zhou, 1996).

A careful look at the evidence does not support this conventional account. First of all, given the fact that the history of world agriculture does *not* have another account of a four-fold crop output increase within a single year, the claim that Xiaogang villagers did so in 1978-79 is hardly convincing. This claim is reminiscent of the fabricated output miracles of the Great Leap Forward period. In fact, many Chinese journalists and scholars find it very questionable (Li, 2009, p. 267).

Secondly and more importantly, available evidence does not verify the claim that decollectivization was a product of a grassroots movement that developed from the bottom up. In fact, the CCP documents of this period proudly stated that local cadres in compliance with the central policies implemented the HRS reform. Moreover, Du Runsheng, one of the top officials in charge of the HRS reform, wrote in his memoirs that the HRS was implemented in Fujian, Guangxi, Heilongjiang, Hunan, and Jilin only after the central government's removal of their provincial leaders. In several other cases, central leadership

obtained the compliance of the provincial leadership after a series of meetings in which the central party officials made it clear that non-compliance was not an option for the leaders who wanted to protect their posts. The son of Hu Yaobang, the chairman of the CCP in 1981-82 and its general secretary between 1982 and 1987, recalled that his father explicitly stated that all officials against decollectivization should be removed from their posts. In fact, during his visits to local leaders of Beijing municipality and Hebei province, Hu explicitly expressed his dissatisfaction with the slow progress of the transition to the HRS and called for an expedited reform. Decollectivization gained pace in these regions following his threatening interventions (Xu, 2013).

This top-down process led to similar practices at the sub-provincial level. The leaders of the Dazhai brigade of Shanxi, which was promoted by Mao and his allies as a national model since the mid-1960s, were removed from their posts in 1981. Central government started a nationwide propaganda campaign against Dazhai in order to totally erase all of its socio-economic achievements from public memory (Zweig, 1989, pp. 183-184). Similarly, the leaders of Zhidan county in Shanxi and Jimo county in Shandong lost their seats because of their opposition to decollectivization (Han, 2008, pp. 155-157). These examples demonstrate that agricultural decollectivization was implemented in China in a strictly top-down fashion during which administrative sanctions were used against its opponents.

It is also clear that opposition against decollectivization was not confined to local cadres and had a significant mass base. Similar to any socio-economic change in China's vast countryside, regional variation was considerable within peasant responses to decollectivization. Nevertheless, from a comparative perspective it appears clearly that

while there was considerable support to decollectivization in regions where the damage inflicted by the Great Leap Forward was very severe, the post-leap recovery was quite slow, and as a result, the collective economy was comparatively underdeveloped. Large parts of Anhui, Gansu, Guizhou, Henan, and Sichuan belonged to this category. On the other hand, the opposition against decollectivization was strong in regions that developed a strong collective economy with a sufficient base of rural industry and/or mechanized agriculture. Rural areas of eastern China (especially Jiangsu, Zhejiang, and Guangdong), parts of Shandong (such as Jimo and Yantai), three northeastern provinces (Heilongjiang, Jilin, and Liaoning, which made considerable advance in mechanized wheat farming), counties on the Chengdu Plain of Sichuan, and many regions in other provinces sharing similar characteristics belonged to that category (Bramall, 2000, pp. 328-331; Endicott, 1988, pp. 134-151; Jiang, 2010, pp. 64-66; Han, 2008, p. 155-157; Xu, 2013; Zweig, 1989, p. 185). William Hinton suggested that the central authorities believed that collective economy was strong in one third of the country, had a medium level of strength in another third, and was weak in the remaining third (Hinton, 1990, pp. 135-140). In a more recent study, He Xuefeng, whose research team has conducted extensive research across rural China for more than a decade, seems to confirm Hinton's earlier estimate. According to He, *at least* one third of the Chinese villagers had serious doubts about the appropriateness of decollectivization (He, 2007).

A brief presentation of a few local cases can help us to understand the reasons of this dissatisfaction. Similar to Maoists' promotion of Dazhai as a national model of collective economy, the central government promoted the Xiangxiang and Suzhou as models of decollectivized rural economy. In Ninth Street brigade in Shulu county of Hebei,

where rural industrialization advanced under the collective system, both peasants and cadres responded to the central government's campaign by stating that:

We answered the call of Zhou Enlai and Chairman Mao to learn from Dazhai. We met all six criteria set down for moving to brigade-level accounting. We will never retreat from it. Yes, we did have a mass discussion of the Xiangxiang and Suzhou experiences...*But the masses didn't agree to move backward. The experience of these places is not suitable to all brigades* (Blecher & Shue, 1996, p. 193).

Similarly, many of the brigades and communes in central Jiangsu refused to divide the collective land among households by arguing that the HRS reform was suitable only to poor mountainous areas (Li, 2009, p. 270). In parts of Jiangsu, even the limited household plots were collectivized and peasants were not willing to take them back because they were satisfied with their income from the collective and did not want to spend much time for cultivating small plots on their own. They were also afraid that by decreasing the scale of production and weakening peasant cooperation, decollectivization might lead to a reversal of the previous gains in areas like irrigation and farm mechanization (Zweig, 1985, 29-31, 45-46; Zweig, 1989, p. 185).

The possibility of losing the livelihood security guaranteed by the collectives was another reason behind the peasant opposition to decollectivization. For instance, in 1982 a peasant from Xinhui county of Guangdong recounted:

The peasants were literally forced to do it. In fact, one peasant in my team was so angry [that] he refused to go draw lots for the parcels of land he was entitled to...Before, people weren't as worried as they are now...they felt sure of having something to eat in the end. But now...with all land distributed, they financially feel insecure...Everyone I know in Xinhui County dislikes the new policies. People practically go around saying, 'Down with Deng Xiaoping' (Chan et al., 2009, p. 272).

In several cases, the privatization of the collective property and the weakening of peasant cooperation fed this dissatisfaction. For instance, a former cadre from Plough Brigade in Zhejiang stated that:

What did we do in Chairman Mao's time? We put national and public interests first ahead of personal interests...Only in this way, the village got better, becoming a place of gold

hills and silver fields. But now who are still concerning [about] the collective? Everyone labours for himself. Everyone racks his brains to sap the collective wall...In this way, bit [by] bit, the previously well-constructed village has been eaten hollow by these worms. (Jiang, 2010, pp. 64-65).

Finally and more importantly, many peasants carefully distinguished decollectivization from other rural reforms that were implemented simultaneously and rejected the former while embracing the latter. As I will discuss below, Chinese peasantry as a whole favored the reform era policies of higher procurement prices (for virtually every major agricultural product), lower prices for farm inputs (such as chemical fertilizers and pesticides), moving away from the extreme emphasis on grain production, and greater freedom for non-grain production. Collective and household farms both responded positively to these incentives. On the other hand, it is clear that by implementing these pro-farmer policies, which reversed the urban/industrial bias of the previous decades suddenly, significantly, and temporarily, the Chinese leadership targeted to obtain the peasants' support for all of its rural policies, especially decollectivization. In fact, the central leadership insisted to present these policies as a single reform package rather than promoting each reform individually primarily because of its concern to legitimize decollectivization in the eyes of the villagers. As we will see below, this populist shift (to high procurement prices and low input prices) led to growing budget deficits and was abandoned immediately after the completion of the HRS reform. In contrast to the economic liberalization scholars who accept the package approach of the Chinese leadership and fail to distinguish the HRS from other rural reforms, many Chinese peasants made a clear distinction between them because they were aware of the fact that other rural policies (especially the price supports) benefited the household and collective farms

equally. As a result, in all cases of opposition mentioned above, peasants did not express opposition to populist reforms despite their objection to the HRS.

However, the central government pushed for a uniform implementation of the HRS reform in all regions including the ones where opposition was present. By early 1984, rural China as a whole completed the transition to the HRS. Nevertheless, it would be wrong to think that peasants' awareness of the subtle difference between other rural reforms and the HRS and opposition to the latter was entirely useless. As we will see below, many regions retained some of the important collective forms of economic organization, which made a significant positive impact on agricultural development in the following years.

The Transition to the Household Responsibility System

One of the most critical questions regarding the sources of high agricultural growth between 1978 and 1984 is the timing of the transition to the HRS. Table 22 provides a detailed answer to this question. First, it shows that Chinese agriculture was entirely collective in 1978 and 1979, during which very high growth rates were recorded. In 1979, there were only two provinces that started the transition to HRS. Given the fact that the Chinese government started to promote HRS by popularizing the case of the Xiaogang village of Anhui in 1978, it is not surprising to see that Anhui started the process earlier than other provinces. On the other hand, collective farming was dominant in 1979 even in this province. Second, there were only three provinces (Anhui, Gansu, and Guizhou) which decollectivized more than half of their farming units by 1980. At the end of 1980, only 14.4% of Chinese farming units were decollectivized. In 1981, six provinces (Guangxi, Hebei, Ningxia, Shandong, Shanxi, and Sichuan) passed the 50% threshold and transitioned to HRS although more than 30% of their farming units remained collective.

By the end of 1981, the national average rate of HRS adoption reached 50%. This increased to 71.9% in June 1982 and 78.2% in December 1982. It is interesting to note that three northeastern provinces resisted decollectivization until 1983. Hence, the decollectivization process was completed only after breaking their resistance in late 1983. Another point that deserves attention is that regions that decollectivized earlier did not have higher growth rates than the ones that decollectivized later. To sum up, high growth rate of Chinese agriculture until 1982 cannot be explained by the decollectivization variable. Chinese agricultural success was closely related to the developments during the collective period.

Table 22. National and Provincial Pace of Agricultural Decollectivization in China

[illegible]

Hebei
Guizhou
Guangxi

Heilongjiang

September: 1%
December: 61.8%
July: 50%
March: 17%
June: 7.1%

September: 0.7%
December: 65%
July: 36.4%
January: 7%
April: 86.8%
December: 62.4%
June: 35.7%

December: 12%
May: 8.7%
November: 73.3%
July: 67%

December: 90+%
March: 85%
February: 73%

Jilin	Jiangxi	Jiangsu	I. Mongolia	Hubei	Henan
December r: 1%			December r: 40%		
December r: 10%		December r: 21.7%	June: 40.1%	December r: 30%	June: 33.2%
December r: 30%	December r: 94.1%	July: 61.9%	December r: 97.1%	October: 50%	December r: 93.1%
June: 28%	June: 80+%	June: 80+%	June: 80+%	April: 39.1%	
December r: 95.5%	February : 94.5%	July: 98.6%		December r: 99.2%	

Shanxi	Shandong	Shaanxi	Qinghai	Ningxia	Liaoning
	December r: 2.4%				
December r: 9.5%	December r: 27.6%			August: 1.4%	
June: 58.4%	December r: 55.9%			June: 51.6%	June: 6.4%
December r: 81.7%	May: 69.3%	December r: 90%	June: 68.8%	June: 90+	December r: 38.7%
January: 95%		December r: 99.2%			December r: 90.9%
					March: 92%

Zhejiang	Yunnan	Xinjiang	Tibet	Sichuan
	December r: 22.7%	December r: 23.8%		August: 9.1%
	May: 35.5%	June: 33.3%	June: 39.2%	December r: 62.3%
	December r: 91.7%	December r: 82.5%	December r: 90%	December r: 79.3%
	June: 84.2%		June: 82%	November: 98%
	March: 97.4%	December r: 94.6%		

Source. Chung, 2000, pp. 64-65.

Sources of Agricultural Growth in China in the 1980s

As Table 23 demonstrates, although its share in the total rural output continuously decreased, agriculture remained the largest sector in China's rural economy throughout the

1980s. Rural industry was the largest contributor to the growth of the rural economy in this decade (Oi, 1990, p. 20) but agriculture remained as a significant contributor. It is therefore necessary to investigate the sources of agricultural growth in the 1980s.

Table 23. Sectoral Composition of Total Output in Rural China, 1980-1990 (%)

Year	Agriculture	Industry	Construction	Transportation	Commerce & Catering
1980	68.86	19.48	6.45	1.69	3.53
1983	66.69	20.04	7.78	2.00	3.49
1984	63.43	22.92	7.31	2.62	3.73
1985	57.09	27.60	8.05	3.00	4.25
1986	53.12	31.52	7.84	3.25	4.28
1987	49.57	34.83	7.67	3.55	4.38
1988	46.79	38.14	7.14	3.47	4.46
1989	45.13	40.65	6.35	3.56	4.31
1990	46.10	40.43	5.89	3.49	4.09

Source. Zhonghua Renmin Gongheguo Tongji Ju, 1991, p. 315.

This section will examine the links between China's collective legacy and agricultural performance in the 1980s in two steps. First, I will compare the performance of collective farming and the HRS. Contrary to the economic liberalization thesis that claims the existence of a sharp break/divide between the two periods in terms of agricultural productivity, I will demonstrate that China's agricultural performance accelerated in the final years of collective farming (due to the dramatic increase in chemical fertilizer supply and procurement prices given by the state) and there was not a big performance gap before and after 1982. Second, by examining the crucial roles of the collective organization in land distribution, crop choice, marketing, maintenance of agricultural infrastructure, farm mechanization, and extension services, I will show that what underlined the agricultural success of China during the 1980s was a *semi-collective/semi-private* farming system rather than a purely private one.

Comparative analysis of agricultural performance in the collective and post-collective periods

We can start with a brief analysis of the agricultural performance in the collective and post-collective periods by looking at per unit and per capita production of major agricultural products. We can start by looking at the population growth rate in the two periods. Chinese population grew by 1.95% per year between 1950 and 1980 and 1.48% between 1980 and 1990 (author's calculation based on Zhonghua Renmin Gongheguo Guojia Tongji Ju, 1991, p. 79). This significant deceleration of the growth rate after 1980 was the product of the correction of the lack of population control policies during the Mao era since the second half of the 1970s and made a direct and long-lasting upward pressure on per capita figures.

Despite the continuous diversification of farming towards non-grain products, the requirement to feed one fifth of the world population with about 7% of world's farmland has continuously compelled the Chinese state to prevent a significant decline in the sown area for grain crops. As a result, grain crops continued to comprise the great majority of sown area in both the collective and post-collective eras: 85% in 1957, 80% in 1980, and 76.5% in 1990 (State Statistical Bureau, 1993, p. 323). The average annual growth rate of grain production per hectare was 3.49% between 1965 and 1981 and 2.86% between 1982 and 1990. Per capita grain output increased by 1.15% between 1965 and 1980 and 1.86% between 1980 and 1990 (author's calculations based on State Statistical Bureau, 1993, p. 336, 355). Hence, the evidence does not support the claim that productivity levels in grain production were very different in these two periods. The modest acceleration of the growth

rate of per capita grain output seems to be related to the deceleration of the population growth rate.

The picture for non-grain crops is more mixed. While there is considerable growth acceleration in some of them, in others we see only modest increases or even decreases. We shall start with cotton, which comprised the second largest percentage of the sown area in both periods (3.6% in 1957, 3.3% in 1980, and 3.7% in 1990). The average annual increase in cotton output per hectare was 1.92% between 1965 and 1981 and 3.5% between 1982 and 1990. Per capita cotton output decreased by 0.21% in 1965-80 and increased by 3.63% between 1980 and 1990. Peanut production (kg/ha) increased by 2.44% between 1965 and 1981 and 3.84% between 1982 and 1990. Sesame production (kg/ha) increased by 3% between 1965 and 1981 and 8.7% between 1982 and 1990. Rapeseed production (kg/ha) increased by 3.74% between 1965 and 1981 and *decreased* by 1.1% between 1982 and 1990. Per capita output of all oil-bearing crops increased by 2.77% between 1965 and 1980 and 6.03% between 1980 and 1990. Sugarcane production (kg/ha) increased by 2.16% in 1965-81 and *decreased* by 0.14% in 1982-90 (author's calculations based on State Statistical Bureau, 1993, p. 323, 336, 355).

On the other hand, a careful look at the developments between 1978 and 1984 shows that the comparative record of the collective and post-collective periods favors the former more than the above summary does. There were three important developments during this period. First, the problem of nitrogen deficiency in Chinese agriculture, which is examined in the previous chapter, was quickly solved in this era. Following the end of the US-led trade embargo against China in 1971, China purchased thirteen large large-scale synthetic ammonia/urea complexes between 1973 and 1975. They began full operation

after 1977 (Stone, 1993, pp. 336-339). As a result, the share of chemical fertilizer in the total fertilizer supply rose from 39.53% to 55.13% within only six years. The application of chemical fertilizer more than doubled, from 58.902 kg/ha in 1978 to 120.635 kg/ha in 1984 (Wang et al., 1996, p. 290). Second, although weather conditions were unfavorable in 1980 and 1981, exceptionally favorable weather conditions made a significantly upward pressure on agricultural output in 1979, 1983 and 1984 (Kueh, 1995, pp. 161-162).

Finally and more importantly, between 1978 and 1984, Chinese government completely reversed the policy of low pricing of agricultural products that prevailed in the previous two decades. In 1979, the government announced unprecedentedly sharp procurement price increases for all major crops. It raised the average quota price of grain by 20%. Above-quota price bonus for grain was increased from 30% to 50%. The government also decreased the grain procurement quota by 5.9% in the same year. Reducing the procurement quota and raising the above-quota prices practically meant a sudden and direct income transfer from the state to the peasants. Moreover, grain tax rates were also lowered. Between 1978 and 1982, the Chinese government reduced the national grain quota and tax by 20%. Similarly dramatic support measures were adopted for other crops as well. In 1979, the average quota price of oil-bearing crops increased by 24% and the above-quota price bonus was raised from 30% to 50%. In the same year, the quota price of cotton increased by 15.2% and an above-quota bonus of 30% was instituted. Procurement price of sugarcane was also increased by 26% in 1979. This trend continued until 1985. More importantly, the state kept its storage gates open and committed itself to purchase most of the product deliveries of the peasants during this period (Sicular, 1993, pp. 48-67).

The scale and scope of encouragement sales (*jiang shou*) programs, which had been implemented since the early 1960s, expanded significantly. These programs had awarded the peasants delivering certain key products to the state with a right to purchase low-priced or scarce commodities (which mainly comprised cheap grain and greater supply of chemical fertilizer). The number of products eligible for obtaining low-priced grain rose from only 68 in 1971 to 175 in 1980 and 206 in 1981. In 1978, the award of chemical fertilizers per 100 kilograms of delivered cotton was raised from 35 to 40 kilograms. In 1979, the state started to provide the cotton growers 100 to 200 kilograms of grain at the low urban retail price. Similar awards were extended to virtually every industrial crop in this period (Sicular, 1993, p. 57, 63).

As a result, in complete contrast to the pre-1978 period during which peasants strived to sell less to the state and more in the black market due to the very low procurement prices, although the state removed many of the previous restrictions on peasant marketing, peasants did their best to sell as many products as possible to the state due to the high procurement price policy. Collective and household farms responded to this unprecedentedly favorable environment equally well (Bramall, 1995, pp. 749-751; 2009, pp. 250-251; Huang, 1990, pp. 222-251; Putterman, 1989, 1993). The combination of these three factors produced a truly remarkable productivity growth. However, this growth proved to be ephemeral for two reasons. First, weather conditions turned from favorable to normal after 1984 (Kueh, 1995, pp. 161-162; Xu 2012a, 2012b). Second, the populist price support policy proved unsustainable. State price subsidies for grain, oil-bearing crops, and cotton reached 12 billion ¥ in 1980 and 17 billion ¥ in 1982. This amount was equal to 12% and 17% of all government revenues in 1980 and 1982, respectively. As I have examined

in the previous chapter, Chinese government had been very sensitive to food price changes in the cities because of its low wage policy in urban industries and fear from urban unrest. This made the total transfer of this budgetary burden to urban consumers impossible. Hence, retail prices for grain remained unchanged. Although the prices of non-grain products (such as red meat, vegetables, poultry products, aquatic products, and milk) were raised in 1979 in order to alleviate the costs of the high price policy, the expansion of income supplements and increases in wages largely offset these measures (Sicular, 1993, pp. 66-67).

Moreover, as mentioned above, due to price increases and state's commitment to purchase most of the product deliveries, peasants struggled to sell as much product as possible to the state in this period. For instance, in stark contrast to the previous three decades during which the Chinese state procured less than 100 billion *jīn* (about 55,115 tons) of grain annually, the total grain procurement reached 196.7 billion *jīn* (about 108,412 tons) in 1983. As a result, the government's storage capacity decreased from 1.78 units to 0.7 units in 1983 (Oi, 1986, pp. 274-275). State marketing activities started to incur huge losses. As the food subsidy cost exceeded one-quarter of the budgetary expenditures and losses caused by inadequate storage capacity mounted, China came to the brink of a fiscal crisis within a few years (Baum, 1994, p. 68; Fewsmith, 1994, pp. 153-154; Oi, 1986, pp. 273-275; Sicular, 1993, pp. 66-67; Stone, 1985, p. 116).⁶¹ Also, the populist price policy had already fulfilled much of its political function of legitimizing the transition from the People's Communes to the HRS by coloring any potential opposition to it as anti-peasant.

⁶¹ These factors explain why although the Maoist leadership was (very probably) aware of the short-run positive incentive effect of a high price policy, it did not take this road due to its particular approach to rural economic development prioritizing the long-term gains over the short-term ones and accumulation over consumption.

As the transition was completed in 1984, there was not much need to retain these populist policies. These factors led to the termination of the high price policy in 1985. Moreover, by abolishing the unified sale and purchasing system and adopting the contracting system (*hetong dinggou*) in 1985, the state freed itself from purchasing all crop deliveries of the peasants. State procurement decreased by 20% in 1985 (Oi, 1986, p. 283). This inevitable reversal made a direct downward pressure on peasants' production incentive. For this reason, a historically sound comparative analysis of the collective and post-collective agriculture has to take into account the exceptional and unsustainable conditions of the 1978-84 period and carefully analyze the comparative performance of the pre-1978 and post-1984 periods.

Adopting this sort of approach leads us to conclusions that are significantly different from those of the conventional accounts criticized in Chapter 1. The annual growth rate of grain output (kg/ha) was 6% between 1978 and 1984 and only 2.4% between 1985 and 1990. The average annual grain output per capita decreased from 2% in 1978-85 to 1.7% in 1985-90. Given the fact that despite the significant nitrogen deficiency and the absence of price incentives, between 1965 and 1978 per unit and per capita grain output rose by 3.4% and 1.21% annually, respectively, it appears clearly that Chinese collective farms did not perform worse than the post-collective farms of the 1980s. This becomes even more evident when we look at the productivity trends of non-grain crops. Cotton output per hectare rose by 12.5% between 1978 and 1984. It reached the record level of 915 kg/ha in 1984. However, it dropped to 810 kg/ha in 1985 and did not rise from that level in the following five years. The figure of 1990 (810 kg/ha) was identical with that of 1985. While per capita cotton output rose by 7.8% between 1978 and 1984, it failed to rise

between 1985 and 1990. Therefore, collective farming's cotton productivity performance between 1965 and 1978 (an average annual growth rate of per hectare and per capita output by 0.5% and an annual *decrease* by 1.7%, respectively) was not much less than the 1985-90 period. The average annual growth rate of peanut output per hectare was 4.91% between 1978 and 1984 and 1.73% between 1985 and 1990. The same figure was 1.95% in the 1965-78 period. Rapeseed production per hectare declined from 9.3% to 0.2% in the same period. The same figure increased by 1.41% annually between 1965 and 1978. Per capita output of oil-bearing crops *as a whole* annually increased by 16.6% in 1978-84 and *decreased* by 1% in 1985-90. Hence, the average annual per capita output growth of the 1965-78 era (0.5%) compares favorably with the 1985-90 period (Author's calculations based on State Statistical Bureau, 1993, p. 336, 355).

To this account we should add two important remainders. First, as mentioned above, collective farms responded to the above-mentioned price incentives very well. Second, the inclusion of the weather and chemical fertilizer supply variables and the correct HRS adoption rates shows that the latter factor did *not* make any significant impact on agricultural growth performance between 1978 and 1984 (Xu, 2012a, 2012b). It appears that there was no great wall separating the collective and post-collective periods in terms of agricultural performance. Given the spike of the supply of chemical fertilizers in the 1980s, the deceleration of the population growth since the mid-1970s, and rural industrialization (which gained pace since the mid-1960s) that enabled the transfer of the rural labor force from farming to industry, per hectare and per capita increases in the 1980s does not look unusual or surprising. Chinese collective farms could achieve the productivity level achieved by post-collective farms at the end of the 1980s. Rather than

creating a productivity miracle in crop production, what the populist agricultural policy between 1978 and 1984 accomplished was to achieve this level earlier but with a cost of stagnation in the following six years.

The development of animal husbandry and sidelines in the 1980s

The discussion above has shown that decollectivization and the production of grain, cotton, and oil crops are not the places to look at for identifying the specific contributions of the post-1978 policies to Chinese agriculture. The main contribution of the reform era policy to agriculture lies in the production of meat, aquatic products, fruits, and vegetables. As Chapter 3 has examined, the Maoist leadership prioritized grain self-sufficiency in the entire post-1961 period in order to sustain its low wage policy for rapid industrial development, rule out a famine like the one happened during the Great Leap Forward, and prepare for a possible war with (one or both of) the two superpowers. As a result, the leadership deliberately forced all provinces to struggle for local grain self-sufficiency at the expense of the development of other areas. Although the total and per capita production of meat, fish, vegetable, and fruits increased, this increase remained quite modest due to the government's deliberate policy of de-emphasizing these items. From a purely economic perspective, this de-emphasis looks certainly problematic. However, given the above-mentioned considerations, tremendous development of agricultural infrastructure that was strongly motivated by the grain emphasis, and the resulting achievement of grain self-sufficiency *before* the market reforms, it is hard to label the Maoist policy as totally irrational. Although its degree of rationality is open to debate, it appears clear that the rapid infrastructural development of the collective period increased the capacity of the agricultural sector to improve non-grain items rapidly whenever the

Chinese state chose to promote them. This happened in the post-1978 era. The Dengist leadership removed most of the previous restrictions on non-grain items and encouraged the peasants to increase non-grain production as much as possible.

Since the infrastructural capability of the farm sector was already developed, farmers were able to respond this call quickly, which led to a rapid development of productivity in these items.

A brief comparison of the total and per capita growth rates in 1965-78 and 1978-90 periods demonstrates the significant acceleration of non-crop production in the market reform era. The average annual growth rate of total production of pork, beef, and mutton increased from 3.44% in the first period to 9.38% in the second. In per capita terms, it rose from 1.2% to 7.7% in the same period. The annual growth rate of total production of fatling hogs rose from 2.18% to 5.6% between the two periods. In per capita terms, it did not grow at all in the first period and rose by 3.9% annually in the second. For aquatic products, the growth rate of total production jumped from 2.83% to 8.47% and of per capita production from 1.19% to 6.88% between the two periods (Author's calculations based on State Statistical Bureau, 1993, pp. 341-355). Similarly, the annual growth rate of vegetable production increased from -1.8% in 1950-69 to 3.1% in 1970-77, 7.5% in 1978-84, and 7.8% in 1985-98. Fruit production also received increasing emphasis and support in the post-1978 era. On the other hand, it is necessary to note that similar to grain and other crops discussed in the previous section, no great wall exists between the two periods. The annual growth rate of fruit production was 5.4% in 1950-69, 6.1% in 1970-77, 7% in 1978-84, and 12.6% in 1985-98 (Cheng, 2007, p. 84).

In brief, the increasing emphasis on and support to the production of meat, aquatic products, fruits, and vegetables in the reform era made a strong contribution to China's agricultural development after 1978.

The collective legacy and agricultural development in the 1980s

This section aims to answer two sets of questions: First, what were the contributions of the agricultural infrastructure and technology that were developed in the collective era to the agricultural development in the 1980s? I will address this question by taking a brief look at the data on irrigated acreage and farm machinery in the late collective period and the 1980s. Second, to what extent was agriculture in the 1980s actually decollectivized? In other words, what were the collective organizational forms that were retained in the 1980s? To what extent they were retained? What were the contributions of these retained forms to agricultural development in the 1980s? I will address this second set of questions by looking at the remaining government control over land, labor, and markets in the 1980s.

The contribution of the infrastructural and technological developments in the collective era

Chapter 1 and 3 have shown that agricultural development in China and elsewhere in the 20th and 21st centuries has depended on advances in three main areas: the development of hydraulic infrastructure, increasing use of modern inputs (chemical fertilizers, high yielding seeds, and pesticides), and mechanization of farming operations. We have seen that although high yielding seeds were widely and rapidly diffused in Chinese farms in the 1960s and 1970s, the solution of nitrogen deficiency was solved with the spike of chemical fertilizer production in the late 1970s and 1980s.

As Chapter 3 has examined, the mobilization of labor and financial resources of the rural population by the collectives enabled the Chinese state to achieve a degree of hydraulic development that was beyond its limited fiscal power. The share of the effectively irrigated area tripled during the collective era (from 16.3% in 1949 to 49.4% in 1982) and made China one of the most developed hydraulic nations of the world. This remarkable success did not leave the Chinese state much to do in the 1980s. Hence, the irrigated area increased by only 1.2% (from 49.4% to 50.6%) between 1982 and 1990 (Zhongguo Shuili Nianjian Bianji Weiyuanhui, 1992, p. 653). Also, as we have seen in Chapter 3, collective mobilization also made possible the extensive and rapid construction and strengthening of the dikes and drainage facilities. In sum, rural collectives handed down a strong hydraulic infrastructure to the agricultural sector of the 1980s, which sustained the increase of land productivity.

We need to take two other consequences into account in order to understand the real magnitude of this contribution. First, the completion of the basic hydraulic construction made possible the significant reduction of the government spending to it throughout the 1980s. As Table 24 demonstrates, while the investment for agricultural capital construction decreased, price subsidies increased significantly after 1978. To put differently, Chinese government financed a part of its high price policy by cutting spending for agricultural infrastructure, including hydraulic infrastructure.

On the other hand, in order to assess the real impact of this financial reshuffling, we need to take into account the changes in the ratio of capital construction investment within total government investment. This ratio was significant in the entire collective era: 7.1% in 1953-57, 11.3% in 1958-62, 17.7% in 1963-65, 10.7% in 1966-70, 9.8% in 1971-

75, and 10.5% in 1976-80. It declined sharply in the following decade, to 5% in 1981-85 and 3.35% in 1986-90. This periodic comparison gives us the rationale and material to establish an alternative scenario to understand how much money the Chinese government would have had to spend in order to keep up the investment level of 1976-80 period. Since the investment level in 1976-80 was not higher than the average level of the previous two decades, we can legitimately take it (10.5%) as the basis of our alternative scenario. Chinese government invested 41.431 billion ¥ for agricultural capital construction between 1981 and 1990 (17.181 billion ¥ in 1981-85 and 24.25 billion ¥ in 1986-90). If it intended to allocate 10.5% of its total investment to agricultural capital construction, it would have to spend 113.239 billion ¥ ($[10.5/5]*17.181 + [10.5/3.3]*24.25$) between 1981 and 1990. This figure is 71.8 billion ¥ more than its actual investment. Since the total government spending for price subsidies was 221.799 billion ¥ in this period (author's calculation based on Table 24), we can conclude that the reduction of spending for agricultural capital construction covered 32% of the price subsidies between 1981 and 1990.⁶² The Chinese government probably would not dare to make such a significant cut in its capital construction expenditure if it did not have strong confidence for the strength of the agricultural infrastructure constructed in the collective era. Without such a spending cut, the budget deficit caused by high procurement prices would certainly be much greater than its already high level. Given the fact that even the actual budget deficit proved unsustainable and forced the government to slow-down the procurement price increases after 1984, the extent of the high price policy might certainly be more modest without the

⁶² We should recall that although the growth rate of procurement prices decelerated after 1984, there was not any return back to the low price policy of the pre-1978 period. As Table 3 demonstrates, price subsidies continued to absorb a significant amount of government funding in the second half of the 1980.

strong agricultural infrastructure inherited from the collective era. This was a significant contribution of the collective system to the agriculture of the 1980s, which has not been acknowledged properly in the literature on rural development in China.

Table 24. Chinese Government's Changing Priority of Agricultural Spending, 1978-1990 (Billion ¥)

Year	Capital Construction	Price Subsidies
1978	5.334	1.114
1979	5.792	5.485
1980	5.203	10.280
1981	2.921	14.222
1982	3.412	15.619
1983	3.545	18.213
1984	3.712	20.167
1985	3.591	23.218
1986	3.506	21.161
1987	4.211	23.817
1988	4.746	24.443
1989	5.065	30.000
1990	6.722	30.939

Source. Zhonghua Renmin Gongheguo Tongji Ju, 1991, p. 156, 223.

Note: Price subsidies include grain, cotton, and edible oil subsidies between 1978 and 1990 and subsidies for the increase in meat prices between 1985 and 1990.

Secondly, in addition to saving capital, strong agricultural infrastructure constructed in the collective period also saved a significant amount of labor. We will see below that labor mobilization for hydraulic development did not cease in the 1980s. However, the strength of the existing infrastructure made the transfer of a significant amount of labor from infrastructure construction to protection possible. In contrast to the villagers of the 1970s who spent successive winters (and in many local cases, much longer than that) with backbreaking construction work, villagers of the 1980s spent much less time for similar work and instead concentrated their efforts on income generating activities including cash crop production, animal husbandry, and rural industry.

In short, by providing a strong agricultural infrastructure and saving significant amounts of capital and labor for productive activities, the legacy of the collective system made a contribution to rural China's economic development in the 1980s.

Table 25 demonstrates that Chinese agriculture entered into the post-collective period with a fairly developed mechanical basis. This basis continued to develop in the 1980s. The rapid pace of the rise in the number of small walking tractors in the 1980s is not surprising given the decrease in the scale of farming after the return to family farming. However, it is important to note that the number of large and medium tractors and combined harvesters, which are adequate for large-scale farming operations, did not decline in this period. Overall, both the tractor-ploughed area and total power of agricultural machinery, which are the general indicators of farm mechanization, continued to rise in the 1980s. Of course, it is wrong to assume that all purchased agricultural machinery were used for farming. For instance, tractors were also commonly used for transportation. However, this does not change the fact that previous gains in the realm of agricultural mechanization were sustained and developed further in the 1980s. I will examine below the role of collective legacy behind this development.

Table 25. Agricultural Mechanization in China, 1982-1990

Year	Large and medium tractors	Small and walking tractors	Combined harvesters
1982	812,447	2,287,000	33,904
1983	840,776	2,750,000	35,728
1984	853,914	3,298,000	35,861
1985	852,357	3,824,000	34,573
1986	866,463	4,526,000	30,945
1987	880,952	5,300,000	33,802
1988	870,187	5,958,000	35,004
1989	848,220	6,543,000	36,582
1990	813,512	6,981,000	38,719

	Large and medium tractor-towed machines	Tractor-ploughed area (ha)
1982	1,374,000	351,150,000
1983	1,308,000	335,720,000
1984	1,235,000	349,220,000
1985	1,128,000	344,420,000
1986	1,006,000	364,280,000
1987	1,035,000	383,930,000
1988	971,000	409,140,000
1989	991,000	425,930,000
1990	974,000	482,552,000

Total power of agricultural machinery (kw)

1982	166,140,000
1983	180,220,000
1984	194,970,000
1985	209,130,000
1986	229,500,000
1987	248,360,000
1988	265,750,000
1989	280,670,000
1990	287,077,000

Source. State Statistical Bureau, 1993, p. 306, 312.

Organizational legacies of the collective system

Chinese agriculture of the 1980s inherited not only a strong infrastructural and mechanical basis but also a resilient organizational structure from the collective era. The constitutional amendment that was made in late 1982 and put into practice in 1984 transformed the three-tiered collective structure (comprising the team, brigade, and commune) rather than eliminating it. Brigades were reorganized as administrative villages, which continued to be called as collectives. Communes were reorganized as townships. In short, two tiers of the three-tiered structure remained largely intact. With the exception of the ones who opposed the HRS explicitly, the incumbent commune and brigade cadres remained in charge of the township and village administrations.

The division and redistribution of the collective land to the households, which became solely responsible for their profits and losses, undermined the material basis of the

production team organization significantly. On the other hand, rather than disbanding them altogether, the Chinese government reorganized the production teams as villager groups (*xiaozu*). The increasing consolidation of household farming made many of these groups into entities existing only on paper. Nevertheless, many small groups remained real entities with practical significance due to two main factors. First, as I will show below, unlike the following decades, several parts of farm operations continued to be organized collectively in the 1980s. Second, although the lineage organizations posed greater resistance to state-imposed collectivization than other rural regions during the 1950s, in the following three decades they developed a mutually supportive relationship and symbiosis with the collective organizations. The collective economy gradually acquired a stronger community basis and the lineage community acquired a stronger economic basis in these regions over time. Hence, in the early 1980s villagers of these regions were much less willing to privatize collective property. The regions that had both strong lineage organizations and strong rural industry were the least willing to privatize. Large parts of eastern China (especially in Guangdong, Guangxi, Fujian, and Jiangxi) belonged to this category. Numerous regions scattered in different provinces also shared similar characters. Villager groups remained strong in these regions. Unlike the regions that stopped electing villager group heads, these regions continued to elect group heads, organize collective works, and raised funds for them (He, 2006a, He, 2006b; He, 2006c; Huazhong Keji Daxue Zhongguo Nongcun Yanjiu Zhongxin, 2012; Lin, 2011; Shen, 2009).⁶³

⁶³ I thank He Xuefeng, Lin Huihuang, and Liu Rui very much for sharing with me detailed information and perspectives regarding the historical background and significance of *xiaozu* in rural China's development in the post-collective period.

Government control over land

In addition to these organizational continuities, we should also recall that the HRS did not privatize rural land in China. Village administrations/collectives remained the legal owners of rural land. They contracted the use rights of land to households for a specific period of time. This separation of the ownership and use rights maintained the government control over land. As in the collective era, state authorities at the county level and above had the final say over land use and transfer and retained the authority to convert farmland into urban land. Although the compensations given to peasants started to increase after 1982, compared to the following decades, peasants still received very little compensation for their acquisitioned lands (Sun & He, 2009, p. 9).

This made a strong impact on production organization. Village collectives retained the right to reallocate farmland in accordance to the changes in population and available labor force in households. This forced the farm households that allocated much of their labor force to non-farm activities to return a portion of their farmland to the village collective which would then contract it out to households who can cultivate it. This prevented the rise of fallowing and a consequent drop in agricultural production. In 1984, the Chinese government announced that the existing land contracts would not change in the next fifteen years and put restrictions to land reallocations within this contract term. However, periodic land reallocations continued in large parts of China. Existing research has found that the majority of the villagers supported periodic land reallocations organized by the village administrations (Huazhong Keji Daxue Zhongguo Nongcun Zhili Yanjiu Zhongxin, 2012, pp. 14-15, 20; Kung, 2000, 2002; Oi, 1999, p. 56). In sum, in contrast to the radical shift from collective to totally private landownership in Eastern Europe and

Russia in the 1990s, China's landownership system transformed from a completely collective to a *semi-collective/semi-private* system in the early 1980s and remained so throughout the decade (Gürel, 2014, pp. 73-75).

Government control over labor and financial resources of the rural population

As we have seen in the previous chapter, obligatory labor and the payment of construction jobs through work points were the two main sources of unpaid labor mobilized for the development of rural infrastructure in the collective period. This mobilization reduced the financial burden of infrastructural development. Although government spending for rural infrastructure was *not* low until 1980, the mobilization of rural labor enabled the Chinese state to achieve a degree of infrastructural development beyond its limited fiscal sources and actual level of spending. The transition to the HRS ended the work point system and undermined the basis of labor mobilization significantly. Moreover, in parallel to the spending cuts for irrigation, China's new leadership de-emphasized labor mobilization for hydraulic works in the early 1980s. The critique of the excesses of the methods of rural labor mobilization in the Mao era became frequent especially during the nationwide attack against the Dazhai model. These factors decreased the state capacity to mobilize labor in rural China (Wakashiro, 1990, pp. 493-494; Zweig, 1989, pp. 183-184).

On the other hand, this decline was not as rapid in the 1980s compared to the following two decades for four main reasons. First, the Sixty Points Document of 1962, which provided the legal basis of obligatory labor, remained in force in the 1980s. Second, there was popular support for organizing collective labor in regions where peasants were unwilling to implement complete decollectivization. Third, as the early signs of a hydraulic decline became visible in the second half of the 1980s, the central government revised its

early de-emphasis of labor mobilization and restarted to encourage large-scale labor mobilization. As we will see below, this revised policy line led to the organization of several large-scale labor mobilizations for agricultural capital construction in the second half of the 1980s. Finally, the Chinese state retained a significant part of its control over the financial resources of the rural population. I will show below that the transfer of the profits of the collective industries to agriculture played a key role in the maintenance of the previous gains in the realm of agricultural infrastructure. Overall, the policy reversals in favor of the mobilization of labor and financial resources of the rural population helped to protect the previous infrastructural (especially hydraulic) gains and sustain a decent growth performance in the 1980s.

Government control over the market

One of the important structural changes in the Chinese economy after 1978 was the abolition of the state's trade monopoly, which helped China's strong tradition of private commerce to flourish again. On the other hand, government control over agricultural trade did not diminish much in the 1980s. First of all, the agricultural boom of the 1978-84 period was itself a result of the government's continuing weight in the market. Despite the removal of restrictions on free markets, peasants strived to produce and sell more to the government due to rapid increases in procurement prices. A similar degree of increase in production incentives was virtually impossible in the absence of government involvement in the market because free market prices were much lower than the prices given by the state in this period. What changed between the pre- and post-1978 periods was the goal and criteria of success of government's market intervention. While these criteria were transferring the agricultural surplus to the industry as much as possible in the first period, the opposite was

true in the second period. The state reversed the inter-sectoral resource transfers in favor of agriculture in order to incentivize agricultural production. The government involvement in the agricultural market achieved considerable success in both periods.

In order to alleviate the increasing fiscal burden of the high price policy, the Chinese government abolished the unified purchase and sale system (that existed since 1953) in 1985-86. Production quotas were replaced with *voluntary* production contracts between state authorities and peasants. The state also decreased the quantity of its procurements and encouraged the producers to sell a larger portion of their produce in the free market. However, the simultaneous decline of both the total quantity of the procured products and the growth rate of procurement prices reduced the production incentives and led to a virtual stagnation of agricultural growth in the second half of the 1980s. Unwilling to raise the procurement quantity and growth rate of procurement prices to their level in 1978-84, the state tightened its control over the agricultural market in a similar fashion to the collective period. Only a year after the announcement of the production contract system, contracts changed again from voluntary to obligatory. To put it differently, the peasants were, once again, forced to deliver a certain portion of their produce to the state. Moreover, while procurement prices stagnated, the state simultaneously increased the quantity of obligatory deliveries significantly. As in previous decades, local governments started to put restrictions on local markets in order to guarantee the fulfillment of the required deliveries. It was frequently reported that local governments did not allow complete freedom to grain marketing even after the fulfillment of quotas. In 1987 and 1988, local governments were allowed to set floor and ceiling prices on “free market” sales of grain, oil and animal products, and vegetables. They were also permitted to establish

responsibility systems to control the retail price index. Finally, the State Council announced that during the 1988 procurement season, procurement of rice would be subject to complete state monopoly and outlawed purchase by any private entities (Sicular, 1993, p. 75).

In short, while government control over the market enabled the implementation of a program to increase production incentives rapidly between 1978 and 1984, increasing government control after 1985 helped to contain the resulting budget deficit and allowed the rebalancing of government finance.

China's Collective Legacy and Agricultural Development in the 1980s

After describing the institutional continuities between the collective and immediate post-collective periods, we can now analyze the impact on agricultural development in the 1980s. We will first look at state-led rural labor mobilization for agricultural capital construction. After that, the local self-financing of agricultural infrastructure in the 1980s will be analyzed briefly. Finally, the significant role of the village collective in farm operations and services will be examined. This analysis suggests that in parallel to the shift from completely collective to *semi-collective landownership*, there was a shift from a completely collective to a *semi-collective farming* in the 1980s.

Labor mobilization for agricultural capital construction

As mentioned above, the Chinese leadership de-emphasized agricultural capital construction in the first half of the 1980s. Excesses of the previous labor mobilization methods were criticized frequently and both cadres and villagers were encouraged to focus their energy on production instead of capital construction. However, as warning signals of

hydraulic decline started to appear in several regions in the second half of the 1980s, the previous de-emphasis of capital construction started to evaporate. Both the official press and academic publications started to criticize the poor maintenance of the existing infrastructure. In 1986, Lu Wen, a member of the Rural Development Research Center, wrote: “In the past few years we have basically been consuming our previous investments into water conservation in agriculture...Since the Household Responsibility System was implemented, most regions have simply stopped water conservation projects. At the same time a number of irrigation systems have broken down, and many left unrepaired” (Lu, 1986, p. 11, cited in Wakashiro, 1990, p. 490). A *People’s Daily* editorial published on 3 May 1987 complained that when thinking about agricultural development many cadres thought only about production and profits and neglected the problems of agricultural infrastructure (Renmin Ribao, 1987a). In January 1988, the Chinese Academy of Sciences published a report claiming that medium and small water conservancy projects had been suspended throughout rural China since 1984 due to the neglect of collective work after the transition to the HRS (Nickum, 1990, p. 284). In short, hydraulic development *gradually* reclaimed its place in policy discussions in the second half of the 1980s.

Although different policy proposals were advocated in the discussions of these problems, a general consensus emerged on the necessity of increasing central and local government spending for agricultural infrastructure and on mobilizing local labor. The official Chinese press’ explanation of the logic of labor mobilization was almost identical to the explanations made during the collective period. According to the *People’s Daily* editorial mentioned above, although the rapid development of the national and rural economy helped to absorb increasing amounts of rural labor, the complete absorption of

the surplus labor and the solution of the problem of rural underemployment would require several decades. It was therefore necessary to think about possible ways to tap this surplus labor in a way to assist rural economic development. Given the fact that a long-term neglect of the agricultural infrastructure would certainly affect agricultural performance adversely, it was logical to revitalize the method of labor accumulation (*laodong jilei*) of the collective era by mobilizing rural labor collectively for completing urgent infrastructural tasks. Substitution of capital with labor in this way would help to reduce the fiscal burden on the central and local governments. Hence, state-led labor mobilization had to remain a part of agricultural policy for the foreseeable future (Renmin Ribao, 1987a).

This growing awareness of the necessity and feasibility of employing surplus rural labor led the local governments (at the county, township, and village levels) to continue mobilizing labor in the 1980s. Despite the regional variation in the degree of success and failure of the maintenance works, at the national level there was not any single year in which labor mobilization was absent. In the 1978-82 period during which collective farming remained strong, labor mobilization continued in large parts of the country. Many important hydraulic works were actually completed in this period.⁶⁴ Three billion cubic meters of earthwork was completed between 1981 and 1984. This was only about 15% of the annual average of the previous decade (Wakashiro, 1990, p. 497), but given the nationwide de-emphasis of capital construction and attack against the collective system and the Dazhai model, this amount of labor mobilization was quite significant.

After the poor harvest in 1985, which was closely related to the reversal of the pro-rural pricing policy of the previous six years, the Chinese government called on local

⁶⁴ For instance, the construction of the basic hydraulic network in Shayang county of Hubei was completed thanks to labor mobilization in 1982 (He, 2012).

governments to revitalize the previous practice of labor mobilization in the agricultural slack season. In the winters of 1985 and 1986, 39 million villagers worked in capital construction projects. 1.45 billion cubic meters of earth and stone work was completed in the country in winter 1985. This rose to 2 billion cubic meters in 1986 (Nickum, 1990, p. 290; Stone, 1993, p. 323; Wakashiro, 1990, 497). This trend strengthened further in the next year. The Ministry of Water Resources and Electric Power called on every rural resident to devote at least 10 days of labor for hydraulic works in order to increase irrigated acreage (Wakashiro, 1990, p. 497). Although the response to this call was varied, it made a significant difference in some areas. For example, in winter 1987, Zhongyang, Liulin, and Xiaoyu counties of Lüliang district of western Shanxi, where agricultural infrastructure had declined in the previous few years due to the insufficiency of the funds, every able-bodied villager (who did not have a job outside the village) was obligated to spend thirty days in construction. As a result, 4.5 million labor days were spent for agricultural capital construction in the entire district (Renmin Ribao, 1987b). In the Fuzhou prefecture of Jiangxi province, local administrations mobilized surplus rural labor for construction activities. For instance, in Linchuan county, about one-third of rural laborers belonged to the category of surplus labor (i.e., did not have much work to do after harvest). The local administration called on each laborer to devote 30 labor days to capital construction works. This collective mobilization resulted in the construction of a reservoir with a capacity of 1.1 million cubic meters and irrigating 5000 mu of farmland. In Fuzhou as a whole, 11.05 million labor days were devoted to capital construction works, through which 13.11 million cubic meters of earth and stonework were completed. This collective effort added 40,000 mu (6590 acres) to acreage under irrigation and protection from flood and drought. This

was the largest amount of local capital construction work done during the previous six years (Renmin Ribao, 1987c).

The ongoing nationwide mobilization effort reached a new peak in 1989, when 56 million villagers (Nickum, 1990, p. 290; He, 1989; Stone, 1993, p. 323) contributed 2.4 billion labor days to agricultural capital construction. As a result of this large-scale collective effort, 3.2 billion cubic meters of earth and stone work were completed. Irrigation facilities were constructed and improved on 30 million mu of farmland. 9 million mu of waterlogged area, 15 million mu of alkaline soil, and 8000 square kilometers of land affected by soil erosion were rehabilitated through collective labor mobilization (He, 1989).

In sum, the legacy of labor mobilization for agricultural capital construction did not vanish after the transition to the HRS and revitalized considerably in the second half of the 1980s. It played a significant role in the preservation of the infrastructural gains of the previous decades and protected Chinese agriculture from a decline in the 1980s. It is also clear that despite its significant decrease compared to the previous three decades, in the 1980s Chinese state maintained a strong capacity to carry out low-cost labor mobilization for the development of agricultural infrastructure. As we shall see, this distinguished the Chinese state from its Indian counterpart, which had to pre-finance the great majority of agricultural capital construction projects due to lack of a similar mobilization capacity in the entire post-1950 period.

Collective self-finance for agricultural capital construction

As examined above, the central government financial investment in agricultural capital construction was low in the 1980s. After the transition to the HRS, the collective

accumulation funds of the villages also dried up rapidly. These factors created a serious funding problem in agricultural capital construction. Nevertheless, early signs of hydraulic decline led the Chinese government to adopt several policies to increase local self-finance to alleviate the problem. First, local governments resorted back to the collection of operation and maintenance fees for water use from local communities, which had been implemented in the collective era at least since 1965. However, even in wealthy Jiangsu province, water fees covered less than 10% of the operation and maintenance costs. Second, local water bureaus were called to develop income-generating sideline activities to finance irrigation costs. This also covered a very small part of the total cost.

Third and more importantly, local governments (at the township level) called on the villages to reestablish collective accumulation funds to help pay for infrastructure costs. In the above-mentioned mobilization campaigns, villagers working outside the village were forced to hire others as their replacement or pay a fee to the local government (Renmin Ribao, 1987a, 1987b, 1987c). Thanks to “the beneficiaries bear the burden” (*shei shouyi shei fudan*) principle, villagers from 16 provinces generated 1 billion ¥ in 1987 (Duan & Xu, 1988, p. 84). This amount was equal to 23.7% of the central government’s total investment to agricultural capital construction in that year (4.21 billion ¥) (Table 26).

Table 26. Agricultural Expenditure by the Central Government and Collective Rural Industries (Billion ¥)

Year	Central Government	Collective Rural Industries
1978	15.066	2.603 (17.27%)
1980	14.995	2.27 (15.13%)
1985	15.362	3 (19.52%)
1989	26.594	7.06 (26.54%)
1990	30.784	7.78 (25.27%)

Source. State Statistical Bureau, 1993, p. 193; Zhongguo Xiangzhen Qiye ji Nongchanpin Jia Gongye Nianjian Bianji Weiyuanhui, 1991, p. 133.

Note. Collective rural industries refer to the Commune and Brigade Enterprises (for 1978 and 1980) and Township and Village Enterprises (for other years). The percentages in

parentheses reflect the ratio of the collective rural industries' spending for agriculture to central government spending for agriculture.

Finally, the policy of “using industry to subsidize agriculture” (*yigong bunong*) was implemented after 1985. This policy obligated TVEs to allocate a part of their profits to local agriculture (Nickum, 1990, p. 292; Sicular, 1993, p. 76). On the other hand, as Table 26 demonstrates, this policy was not entirely new because collective rural industries had supported local agriculture financially for a long time. Hence, it reflected the continuation of the collective legacy of local self-finance. Although considerable regional variation existed with regard to the agricultural support actually provided by TVEs, as Table 4 demonstrates, their total financial contribution to agriculture was quite high in the 1980s. This policy prevented the intensification of hydraulic problems stemming from the decrease in government spending (Nickum, 1990, p. 292; Sicular, 1993, p. 76). The figures on Table 26 include all sorts of agricultural support provided by rural industries and therefore do not reflect their actual contribution to capital construction. However, there is evidence that the share of capital construction expenditure within total agricultural expenditure was considerable. For instance, in 1987 alone, TVEs contributed 500 million ¥ to irrigation (Duan & Xu, 1988, p. 84), which was equal to 11.87% of the central government expenditure for all types of agricultural capital construction. In sum, the mobilization of the financial resources of collectively owned rural industry made a significant contribution to maintaining the previous gains in agricultural infrastructure.

Collective farm organization

We can finally turn to the collective organizations' involvement in agricultural production. The Rural Cooperative Organizations Task Group of the Economic Policy Research Center of the Ministry of Agriculture carried out the largest survey research on

this particular topic in 1988. The survey included 1200 villages from 100 counties located in all provinces and provincial level cities of the PRC with the exception of Shanghai and Tibet. By following the official division of the country into three macro-regions, the survey compared the property ownership and farm management in eastern, central, and western provinces. The findings of the survey shed light on the collective legacy of farm organization in China in the 1980s. The most important findings are shown on Tables 27, 28, and 29.

Many of the collective assets (buildings, machinery, farm animals, etc.) were auctioned off to the highest bidding households during the HRS reform. Despite this privatization, the share of the collective assets within total assets remained significant. As Table 27 demonstrates, about 45% of all fixed productive assets were under collective ownership as late as 1987. The survey data takes into account the important distinction between the assets owned and used collectively versus the ones owned by the collective but contracted out to households. The latter category also contributed to collective organization since the rental income generated was used for developing the collective economy and welfare services. However, the former category is obviously a better indicator of the collective's capacity of production organization. The fact that assets under collective use comprised 40% of all assets indicates that it remained strong. Also, in confirmation of the argument above that villagers of the most advanced regions were less willing to privatize collective assets, the table reveals that the ratio of the collective assets was highest in Eastern China where collectives owned 56.6% of all fixed productive assets in 1987.

**Table 27. The Distribution of the Possession of the Fixed Productive Assets, 1978-87
(% of All Assets)**

	All-China				Eastern China			
	1978	1980	1984	1987	1978	1980	1984	1987
Household	9.4	12.4	45.9	52.1	13.5	14.0	67.4	58.70
Collective:	90.6	87.6	52.4	44.9	86.49	85.95	63.82	56.62
1. In collective use	88.6	84.6	44.2	40.5	86.42	84.77	63.60	2.08
2. Contracted out to households	2.0	3.0	8.2	4.4	0.07	1.18	0.22	4.52
Other types of cooperatives	—	—	1.7	2.9	—	—	—	—

	Central China				Western China			
	1978	1980	1984	1987	1978	1980	1984	1987
Household	1.02	4.97	60.47	62.41	10.06	18.87	72.0	84.21
Collective:	98.98	95.03	36.79	35.53	89.94	81.13	27.96	15.09
1. In collective use	97.99	94.06	21.84	27.96	80.36	70.09	15.19	8.79
2. Contracted out to households	0.99	0.97	14.95	7.57	9.58	11.04	12.73	6.90
Other types of cooperatives	—	—	2.74	2.06	—	—	0.03	0.10

Source. Nongyebu Jingji Zhengce Yanjiu Zhongxin Nongcun Hezuo Zuzhi Ketizu, 1989, p. 6.

Note: The source providing the data does not give a strict definition of the term *lianhe yongyou* (which can be translated as “jointly owned” or “joint ownership”). It uses the term loosely, referring to various forms of cooperative management by the villagers. For this reason, I use the expression of “other types of cooperatives” on the table. I also corrected a few numerical typos in the original source.

Tables 28 and 29 reveal important facts about agricultural organization in the post-1978 China that have been neglected by the great majority of the scholarship on rural China (with some important exceptions include Huang, 1990; Jiang, 2010; Li, 2009; Sicular, 1993). As Table 28 demonstrates, a significant part of the village administrations continued to organize key farm operations and services in the 1980s. It appears that following the first (and very rapid) wave of top-down decollectivization until 1984, the degree of collective farm operations and services did not decline much in the second half of the 1980s. The share of villages that organized farm operations collectively within all surveyed villages was 44% in tractor ploughing, 17% in harvesting, and 34% in threshing. This finding points to one of the main sources of the maintenance of the previous gains in the field of mechanized farming despite the division of collective land among households. It

is clear that the mechanical capacity developed (Table 25) and technical personnel trained from within the rural population during the collective era (Table 30) did *not* cease to be employed in a collective fashion in much of China in the 1980s. In confirmation of the above analysis on hydraulic organization, the table shows that more than half of the villages organized irrigation services in 1987. More importantly, the most advanced rural regions located in eastern China maintained a significantly larger part of the collectively organized tasks and services than the central and western provinces.

Table 28. The Ratio of the Villages Organizing Specified Farm Tasks and Services Collectively in 1984 and 1987 (% of all Surveyed Villages)

	All-China		East		Central		West	
	1984	1987	1984	1987	1984	1987	1984	1987
Tractor ploughing	46	44	81	75	36	34	20	23
Irrigation and drainage	56	53	88	85	61	57	28	15
Purchase of inputs	50	48	61	59	49	45	40	39
Plant disease prevention	56	51	48	46	60	52	69	56
Harvesting	20	17	19	17	14	19	27	15
Threshing	33	34	49	50	18	24	33	28
Transporting grain	9	8	15	9	11	12	3	4
Marketing	47	23	49	20	38	21	54	30
Technical training	46	39	44	30	57	41	49	45
Consultancy & accounting	42	33	90	50	35	23	31	11

Source. Nongyebu Jingji Zhengce Yanjiu Zhongxin Nongcun Hezuo Zuzhi Ketizu, 1989, p. 11.

Table 29 demonstrates the ratio of activities organized solely by village administrations (previously brigades) or small villager groups (previously production teams). It, again, shows that in the most advanced regions, villages and teams organized many of the key farm operations and marketing. Since in many villages mechanized operations were carried out as before regardless of the borders drawn between different households' land, previous gains in mechanized farming were preserved to a significant extent. This directly assisted rural industrialization because the continuation of mechanized farming enabled the rural households to maintain high output levels without keeping much

of their labor force in agriculture. On the other hand, reflecting the previous efforts to extend farm mechanization and rural industrialization in the less developed areas, the figures for central and western regions are far from negligible. The degree of collective organization of farming in central and western China in the 1980s reflects a far higher level compared to the level of the great majority of rural India in the entire post-1950 period.

Table 29. The Degree of Collective Organization of Agricultural Production in Three Macro-Regions of China in 1984 and 1987 (% of All Surveyed Farms)

	East		Central		West	
	1984	1987	1984	1987	1984	1987
Village (or group) organize ploughing	80	76	40	34	27	20
Village (or group) organize irrigation	87	85	43	36	25	16
Village (or group) purchase seeds	55	46	34	17	28	15
Village (or group) purchase fertilizer	56	50	38	30	27	21
Village (or group) purchase pesticide	57	51	39	26	26	23
Village (or group) purchase diesel oil	76	65	48	29	35	20
Village (or group) purchase membrane	47	55	58	37	54	36

Source. Nongyebu Jingji Zhengce Yanjiu Zhongxin Nongcun Hezuo Zuzhi Ketizu, 1989, p. 12.

Table 30. Institutions Rendering Agricultural Services in China, 1952-1990

Agricultural Technical Stations			Livestock Breeding Stations	
Year	Number	Personnel	Number	Personnel
1952	232	NA	389	NA
1957	13669	NA	821	NA
1979	17622	NA	1174	NA
1980	15114	NA	533	NA
1982	17300	114,140	547	4101
1985	14242	121,562	793	5042
1990	17387	156,864	434	2841

Seed Stations and Companies			Seed Demonstration and Breeding Stations	
Year	Number	Personnel	Number	Personnel
1952	NA	NA	NA	NA
1957	1390	NA	1899	NA
1979	2369	NA	2418	NA
1980	2436	NA	2404	NA
1982	2787	46,845	2421	320,000
1985	2487	46,529	2363	300,745
1990	2775	57,831	2390	295,392

Source. State Statistical Bureau, 1993, p. 356.

To conclude, contrary to the conventional wisdom assuming a complete transition to privately organized and household-based farm organization in the early 1980s, the findings presented in this section demonstrate that Chinese agriculture acquired a *semi-collective/semi-private* character in the 1980s in which collective organizations (townships, villages, and villager groups) established during the previous decades played key roles in the construction and maintenance of agricultural infrastructure and organization of farm production. This continuity between the collective and post-collective periods is an important reason behind the sustenance of the respectable growth performance of the Chinese agriculture in the 1980s.

The Collective Legacy and the Development of Human Capital in the 1980s

Chapter 2 examined the close link between the development of human capital and rural economic development in the collective period. The rapid development of basic healthcare and education services provided by the collectives improved the human capital base significantly. The similarly rapid development of the collectively organized agricultural extension services and rural industrialization raised this base further by developing the productive skills of the rural labor force. Although the infrastructure that supported this development of human capital declined during the 1980s as a result of decollectivization, this legacy of the collective system continued to significantly contribute to rural China's economic development throughout the decade.

Rural healthcare

Healthcare was one of the important areas that were most negatively impacted by the transition to the HRS. The cooperative medical system that covered about 90% of the

rural residents of China in the second half of the 1970s was dismantled during the transition to the HRS. The quick evaporation of collective welfare funds undermined the financial basis of the cooperative medical system. As a result, the coverage rate of the cooperative medical system decreased from 90% in 1980 to 5% in 1985. In other words, rural healthcare services were privatized in almost all of rural China (Liu & Cao, 1992, pp. 504-505; Liu & Rao, 2006, p. 76; Wagstaff et al., 2009, p. 27). In the new era, villagers had to pay fees for medical services. Barefoot doctors of the collective period opened private clinics and started to charge their patients substantial fees. Between 1978 and 2003, out-of pocket health expenditures in China *as a whole* rose by 15.7% annually (Wagstaff et al., 2009, p. 19).

Privatization of healthcare impacted each region differently. Many of the economically advanced regions maintained the cooperative medical system because they had strong rural industries providing a sufficient fiscal basis for it. For instance, it was reported that ten counties in Hubei, Jiangsu, Shandong, and Shanghai maintained a cooperative medical coverage rate of more than 80%. Moreover, about one-third of Chinese villages maintained their collective welfare funds and covered a significant part of the medical costs of their residents (Liu & Cao, 1992, pp. 505-506). However, poor rural regions concentrated in central and western China could not maintain these systems. The social and economic costs of healthcare privatization were significant in these regions. In the second half the 1980s, the percentage of patients not seeking medical help due to economic difficulty in regions having privatized healthcare was twice that of regions maintaining cooperative healthcare systems. Morbidity from diseases preventable by immunization was also twice as high in the former. The percentage of poverty resulting

from diseases was more than twice as high in the former (Liu & Cao, 1992, p. 507). Lost workdays due to illness in poor rural regions was twice the national average (Liu & Rao, 2006, p. 77). Surveys conducted in the mid-1980s found that more than 70% of the rural population was in favor of the re-establishment of the cooperative medical system. The combined impact of this strong popular demand as well as the Chinese state's fear from a looming healthcare crisis in the countryside paved the way for a slow recovery. The share of the cooperative medical coverage increased from 5% in 1985 to 9.4% in 1987, 10% in 1990, and 13% in 1993 (Liu & Cao, 1992, p. 507; Liu & Rao, 2006, p. 77).

On the other hand, it is important to note that although the negative impact of agricultural decollectivization on rural healthcare and economy is evident, it was small in the 1980s compared to the following decade due to several reasons.⁶⁵ First, six years of underfunding (after 1984) was not enough to reverse back the gains of the healthcare revolution of the previous decades. Second, compared to both the Republican China and post-independence India, the increase in the education level of the villagers and the development of infrastructure reduced the spread of communicable diseases due to poor hygiene in rural China of the 1980s. Third, although the increasing healthcare costs strained household budgets especially in the poor areas, the rapid increase in per capita income across rural China helped the villagers to afford healthcare expenses to a certain extent.

Therefore, in the 1980s basic healthcare indicators improved much more slowly than in the collective period but did *not* decline. For example, in China as a whole, maternal mortality rate (per 10,000 live births) decreased from 1500 in 1950 to 100 in 1980 and 95

⁶⁵ In response to the growing healthcare problem that became a part of the rural crisis and villager discontent in the 1990s, Chinese government started to establish a nationwide rural medical system in 2003 (Dib et al., 2008).

in 1990. Similarly, the annual rate of decrease in the mortality rate of children under the age of five was 6.3% between 1960 and 1980 and almost 3% in the 1980s (Wagstaff et al., 2009, pp. 15-16). The death rate per 1000 people decreased from 11.4 in 1981 to 9 in 1990. In the same period, life expectancy at birth slightly declined, from 70.2 to 69 years for females and 67.9 to 66 for males (State Statistical Bureau, 1983, p. 105; Zhonghua Renmin Gongheguo Guojia Tongji Ju, 1992, p. 847). The degree of health problems was not high enough to hinder economic growth significantly in the cities and the countryside in the 1980s.

Rural education and skill development

The trajectory of rural education in the 1980s was also problematic but not as much as that of healthcare. Tens of thousands of rural schools were closed down in the first half of the 1980s (Andreas, 2010, p. 79). The nationwide de-emphasis on rural education and the increasing obsession with money-making led many parents in the countryside to stop sending their kids to school after a few years of elementary schooling. Dropout rates soared (Peng, 1997, p. 125). However, it appears that this tendency was temporary and not strong enough to reverse the previous gains in literacy. The literacy rate at the national level continued to rise, from 68.1% in 1982 to 77.6% in 1990 (Zhonghua Renmin Gongheguo Tongji Ju, 1985, pp. 32-33; Zhonghua Renmin Gonghuguo Tongji Ju, 1991, p. 85). More importantly, the country's capacity to provide technical training at the point of production continued to improve. First, as Table 30 demonstrates, agricultural extension capacity remained strong in the 1980s. Cultivators continued to learn new inputs and techniques from the extension personnel. Second, as we will see below, rural industries continued to

develop very rapidly. The expansion of industrial employment continuously improved the skill level of the rural workers.

In sum, although agricultural decollectivization had a negative impact on rural healthcare and education, rural China managed to sustain the health and education gains that it inherited from the collective era. Also, the preservation of the agricultural extension system established in the previous decades and the continuation of rapid rural industrialization (primarily under the collective framework) helped to develop the skill level of the rural labor force and made a positive contribution to economic development in the Chinese countryside in the 1980s.

Rural China's Collective Legacy and Industrialization in the 1980s

Although agriculture's contribution was far from negligible, rural industry emerged as the main engine of rural economic growth and one of the main engines of national economic growth in the 1980s. The share of the non-farm activities in the total rural output rose from 31.14% in 1980 to 42.91% in 1985 and 53.9% in 1990. The share of industry in the total rural output rose from 19.48% in 1980 to 27.60% in 1985 and 40.43% in 1990 (Table 23 and 31). The number of nonagricultural workers in the countryside rose from 29,997,000 in 1980 to 69,790,000 in 1985 and reached 93,668,000 in 1990. Their share in the total rural labor force rose from 9.4% in 1980 to 18.8% in 1985 and 22.1% in 1990 (Zhongguo Xiangzhen Qiye ji Nongchanpin Jia Gongye Nianjian Bianji Weiyuanhui, 1991, p. 133). Between 1980 and 1990, the average annual growth rate of total value-added of all types of TVEs increased by 17.9% and of *industrial* TVEs by 20.47% (Author's calculation based on Bramall, 2007, p. 56). This remarkable rural industrialization made an increasingly significant contribution to the national economy. The share of rural non-farm

activities in national output rose from 7.8% in 1980 to 16.6% in 1985 and 24.6% in 1990. Their share in national employment rose from 7.1% in 1980 to 14% in 1985 and 16.4% in 1990 (Zhongguo Xiangzhen Qiye ji Nongchanpin Jia Gongye Nianjian Bianji Weiyuanhui, 1991, p. 133).

This remarkable performance was an achievement of the collective economy. Commune and brigade industrial output grew with an average annual rate of 23.5% between 1971 and 1978 (Bramall, 2007, p. 23). Hence, rural industrialization performance of the 1970s was as successful as in the 1980s. More importantly, commune and brigade industries were *not* privatized in the 1980s. In 1984, they were renamed as the Township and Village Enterprises and remained under the ownership of the township (formerly commune) and village (formerly brigade) administration. Although rural private enterprises developed in the 1980s, mainly consisting of self-employed villagers and very small workshops, TVEs continued to comprise the largest share of industrial employment (%59.4 in 1985 and 49.5% in 1990) and output (73% in 1985 and 65% in 1990) in rural China (Zhongguo Xiangzhen Qiye ji Nongchanpin Jia Gongye Nianjian Bianji Weiyuanhui, 1991, p. 133). In short, the collective legacy was the most important factor behind rural China's remarkable industrialization performance in the 1980s.⁶⁶

In addition to their dominance in the *ownership* of rural industries, township and village governments also remained in charge of their *management*. Although local governments started to contract out the management rights of the rural industries to

⁶⁶ On the other hand, as examined in the previous chapter, if we expand our definition of "rural industry" from our narrow definition including only the CBEs/TVEs to a broader one including all state- and collective-owned industries located in the counties and sub-county jurisdictions, the industrialization level of the pre-reform and reform periods appear much higher. The number of workers employed in the SOEs run by the county governments was 24.02 million in 1978, 26.93 million workers in 1980, and 31.97 million in 1990. In the late 1980s, county industries' share of all rural industries was 57% in Gansu, 42% in Jiangxi, and 36% in Sichuan (Bramall, 2007, pp. 58-60).

individuals, they continued to have greater power than the individuals in every important managerial decision. Three types of contract relations emerged in this period. The first was the fixed rent system, which was common in village (but less so in township) industries in the early 1980s. In this system, village administrations set fixed profit targets and left all over-quota profits to the managers who obtained the right to run these enterprises through contracts. However, village administrations soon became more aware of the economic potential of these enterprises, and they shifted to an alternative system that can be labeled the floating rent system, which increased local governments' share in the quota and over-quota profits dramatically. Finally and more importantly, the increasing success of the rural industries convinced many local administrations to assume greater managerial control over them. This gave rise to the factory-management contracting system. Rather than contracting enterprises out to individuals, this system contracted the enterprises to their employees as a whole. Managers received a fixed salary that was usually about twice an average worker's salary and were entitled to receive bonuses if the enterprise reached the profit target specified in the contracts. By transforming the owner-manager relationship from a rentier to an employment relationship, this last system increased the managerial authority of the local governments in rural industries. It also directly increased the fiscal basis of the local governments. For example, in 1984, 43.9% of the after-tax profits of the TVEs were appropriated by the township and village administrations (Oi, 1990, pp. 27-28).

The authority of local governments was evident in all aspects of industrial management. First of all, both the enterprises contracted out to individuals and the ones retained under direct collective management continued to be subject to economic planning

in the 1980s. Higher authorities (at the county level and above) handed down annual output targets to most enterprises. Although the official discourse of the 1980s proposed a subtle distinction between the “mandatory targets” of the pre-reform era and “guidance targets” of the reform era (which were supposedly based on economic incentives instead of administrative reinforcement), this distinction was often blurred at the grassroots level. The continuity of economic planning was especially pronounced in employment practices. Local officials, not the factory managers, decided how many workers were going to be hired and who they were. Furthermore, subcontracting relations between the rural factories and the large SOEs at the county level and above continued to flourish in the 1980s. The central government and local governments also put restrictions to the entry of large urban industries into the countryside in order to allow rural industries to grow without much competition from them (Zhan, 2013, p. 185). This factor also strengthened the power of economic planning because higher state authorities not only handed down mandatory production quotas for the products designated as “key items” but also set their prices directly (Oi, 1990, p. 25). Finally, based on their continuing control over land, township and village administrations did not have to pay rent or significant compensation when taking land to establish new factories. Easy access to inexpensive land reduced the initial investment costs of rural industries significantly (Zhan, 2013, p. 138-139).

The continuation of collective ownership and management of rural industries in the 1980s was vital for increasing the geographical and social basis of industrialization and economic development in the countryside. As examined in the previous chapters, in continent-sized and very populous countries like China and India, significant regional variation of economic development is inevitable due to various ecological, geographical,

and historical factors. However, since their less developed regions contain very large populations, in order to achieve a sustained and rapid national economic development these countries have to develop their less advanced regions which contain large segments of the population, at a decent rate. In the less developed rural regions of central and western China, peasant households did not command sources to develop modern rural industries, which left local governments the only agents capable of accomplishing this mission. As the subcontracting relationships between the commune and brigade industries and SOEs developed in the 1960s and 1970s, especially under the impact of the “Third Front” campaign of industrialization in western China, they were able to receive financial and technical support from the state. For this reason, local governments at the county, township, and village levels were able to industrialize their jurisdictions steadily. In the early 1980s, privatization of these enterprises would have hindered this process because private entrepreneurs were still financially too weak to shoulder the burden of industrial investment. Hence, the continuation of local government dominance in rural industries helped maintain capital accumulation and diffusion of industrial and managerial skills among the rural population.

Table 31 demonstrates the success of this economic strategy. It shows that the efforts to broaden the geographical basis of rural industrialization by the collectives in the pre-1980 period were largely successful. In 1980, the share of industry in total rural output was highest in the east coast (such as Fujian, Guangdong, Jiangsu, Shandong, and Zhejiang) and the rural hinterland of major urban centers (Beijing, Tianjin, and Shanghai). Nevertheless, the great majority of other provinces had already acquired a respectable rural industrial basis by that time. The continuation of the local government control over the

rural industry helped to push the industrial frontier even further in the 1980s. As the table demonstrates, while the share of the industry in total rural output achieved very high levels in the advanced areas, it also doubled or more than doubled in a large number of other provinces (Anhui, Gansu, Henan, Guizhou, Hebei, Hubei, Jiangxi, Shaanxi, and Sichuan) and it grew at a more modest but still respectable rate in several others (Guangxi, Heilongjiang, Hunan, Jilin, Liaoning, Ningxia, Qinghai, Shanxi, and Yunnan).

Table 31. The Share of Industry in Total Rural Output in Chinese Provinces, 1980-1990 (%)

Provinces	1980	1985	1990
Anhui	9.91	17.53	26.76
Beijing	35.53	50.03	58.38
Fujian	17.47	22.03	34.74
Gansu	9.59	11.01	21.65
Guangdong	20.18	21.75	38.25
Guangxi	9.62	8.82	13.09
Guizhou	5.50	11.35	14.58
Hebei	22.06	32.10	46.43
Heilongjiang	10.47	15.36	20.64
Henan	16.92	17.51	31.87
Hubei	14.13	21.83	29.63
Hunan	14.43	17.00	24.68
Inner Mongolia	9.94	5.96	10.43
Jiangsu	39.87	49.77	60.40
Jiangxi	11.48	17.46	24.31
Jilin	12.84	16.04	24.78
Liaoning	23.78	37.93	49.04
Ningxia	10.32	10.75	17.78
Qinghai	5.98	7.99	9.81
Shaanxi	12.63	20.48	28.98
Shandong	19.23	24.33	52.34
Shanghai	52.28	64.75	71.09
Shanxi	25.82	35.67	44.57
Sichuan	11.56	17.37	26.93
Tianjin	50.72	52.54	69.58
Tibet	0.89	1.03	1.14
Xinjiang	6.10	5.89	5.35
Yunnan	9.41	9.99	13.21
Zhejiang	25.75	46.21	58.06
All-China	19.48	27.60	40.43

Source. Zhonghua Renmin Gongheguo Guojia Tongji Ju, Nongcun Shehui Jingji Tongji Si, 1986, p. 25; Zhonghua Renmin Gongheguo Guojia Tongji Ju, Nongcun Shehui Jingji Tongji Si, 1991, pp. 46-47.

Note: The figures for 1980 and 1985 are directly provided by the 1986 yearbook and the figures for 1990 are calculated by the author based on the 1991 yearbook.

Moreover, despite rising income inequality following agricultural decollectivization and market reforms, a certain degree of egalitarianism and social protection continued to foster rural industrialization in the 1980s. For example, the villagers whose land was expropriated by the township and village administrations for industrial purposes were given jobs in the newly established rural factories. Many local governments continued to pursue the goal of creating one industrial worker in every rural household (Zhan, 2013, pp. 183-186).

Finally, although the private rural industries remained small compared to collective industries, they also grew rapidly in the 1980s. The collective legacy also underpinned their success. As examined in the previous chapter, most of the successful entrepreneurs of the 1980s acquired their managerial skills through training and practice in collective industries. After working in collective factories for several years, many workers established their own small workshops. This was a strong trend to the extent that many collective factories in coastal rural China collected fees from their workers before hiring them in order to discourage them from quitting jobs after acquiring valuable industrial skills (Oi, 1990, p. 32). The contribution of the collective legacy was quite evident in the experience of the Wenzhou municipality of Zhejiang province, which has been known since the 1980s as the most successful case of private rural industry in China. Between 1971 and 1978, Wenzhou's commune and brigade industries grew by 19% annually. Moreover, between 1970 and 1978, the average annual growth rate of all industries (CBEs and SOEs

combined) at the county level and below was 10.8% in Wenzhou (Bramall, 2007, pp. 27-28). The CBEs and SOEs laid much of the groundwork for the success of private rural industry in Wenzhou as elsewhere.

Conclusion

This chapter has demonstrated that the collective legacy played a key role in rural China's remarkable economic development in the 1980s. We have seen that the agricultural achievements of the 1980s were based on the collective system's success in the realms of agricultural infrastructure, farm mechanization, and extension services. The strong agricultural growth performance between 1978 and 1984 was *not* strongly related to the transition to the Household Responsibility System. It was closely related to the solution of the nitrogen deficiency, the tremendous rise of the procurement prices, and the encouragement of production of non-grain products and animal husbandry. As our comparative analysis of the agricultural performance in 1965-78, 1978-84, and 1985-90 has demonstrated, China's collective farms performed respectably given the huge technological and institutional constraints of the time (the nitrogen deficiency, grain emphasis, and the low price policy) and the performance of the post-collective agriculture of the 1980s does not appear significantly better than that of collective farming. Many of the peasants of the advanced regions were aware of the obvious difference between institutional (the HRS) and other reforms, and they were not enthusiastic supporters of the former but embraced the latter wholeheartedly. Furthermore, the analysis above has also revealed that contrary to the conventional wisdom presenting the HRS as a peasant movement developed first at the grassroots level and then gradually convinced the party-state leadership, in reality the HRS reform was implemented as a top-down policy. Many

peasants and cadres opposed the HRS but nevertheless were silenced and forced to comply with it.

Nevertheless, the new agrarian structure of the 1980s was not a completely private and household-based economy, but rather it was a semi-collective/semi-private system in which the county, township, and village administrations retained a significant degree of control over land, labor, and markets. More importantly, in large parts of rural China (especially in the most advanced regions) local governments and peasants organized key parts of agricultural production (especially irrigation and mechanized operations) in a collective fashion. In other words, although large collective farms gave way to small and fragmented family farms, thanks to these institutional legacies, the latter were irrigated and cultivated in much the same way as the former. Finally, the continuing government control over rural industries as well as some financial resources of the villagers helped generate funds that maintained the existing agricultural infrastructure despite significant cuts in central government spending for agricultural capital construction. For these reasons, the collective legacy played a key role in the development of the agricultural sector in the 1980s.

China's rural healthcare and education performance declined in the 1980s compared to previous decades. Some advanced regions maintained the cooperative medical system thanks to their growing collective welfare funds, but coverage by the system dropped sharply in most rural regions. Increasing medical costs due to healthcare privatization blocked the improvement of rural health in the 1980s. However, the developed infrastructure, greater popular knowledge of hygienic and healthy practices, rising per capita income, and the (very) slow recovery of the cooperative medical system

prevented the loss of the previous gains in healthcare. Although collective funds used to maintain rural education came under heavy strain and school dropouts rose in most of rural China, the literacy rate continued to increase. Moreover, as rural industrial employment kept expanding, the industrial and managerial skills of the rural labor force improved continuously in the 1980s.

Finally, the analysis above has demonstrated that the collective legacy was the key factor behind rural China's remarkable industrial performance in the 1980s. The growth rates of rural industries were similarly high before and after 1978. In addition to developing industry at a remarkably high rate in the relatively industrialized rural regions of coastal China, rural collectives also expanded the industrial frontier to the central and western provinces, which lacked any significant industrial basis before collectivization. The maintenance of collective ownership and control over management of most rural industries in the 1980s pushed these ongoing tendencies further. Subcontracting chains that had been established between the urban SOEs and rural industries since the mid-1960s strengthened in the 1980s. Rural cadres who gained experience in industrial management in the previous decades remained in charge of rural industries in the 1980s. In addition, increasing literacy rates and educational levels and the diffusion of industrial skills through on the job training improved the human capital basis of China's rural industries. As the experience of Wenzhou demonstrates, the success of private rural industries in the 1980s was closely related to the development of human capital and industrial infrastructure by collective and state-owned industries in previous decades. As a result, rural China experienced a geographically and socially broad-based industrial revolution in the 1970s and 1980s.

IV. THE WEAKNESS OF STATE-DIRECTED RURAL MOBILIZATION AND THE PERFORMANCE OF INDIA'S RURAL ECONOMY (1947-1990)

In this chapter, I will provide an account of the post-colonial state's efforts to develop India's rural economy during the first four decades following independence. This chapter will demonstrate that although top government leaders and economic planners in the late 1940s and 1950s did not aim to change the private character of the country's rural economy, they did aim to develop a strong rural organization that could mobilize labor and financial resources of the villagers according to the requirements of state-led and planned development. Two main organizational apparatuses were devised for achieving this goal: village councils (*gram panchayat*) and cooperative farms. The intention was to use these institutions to mobilize surplus rural labor in capital construction projects during agricultural slack seasons and without the state providing market wages. They were thought to be suitable for establishing local funds to further reduce the cost of these projects for the state. Finally, the Indian leadership hoped to use these organizations to facilitate agricultural taxation and rural industrialization.

While the Chinese revolution had destroyed the rural elite, flattened the political economic terrain, and thereby enabled the state to establish rural collectives relatively easily, the absence of a similar transformation in India left formidable obstacles to the Indian leadership's effort to establish strong village councils and cooperative farms. We will see below that although the Indian leadership was well aware of these obstacles, it was determined to realize this goal. Ultimately, it failed in both endeavors. Rural elites (comprising both rentier landlords and the emerging middle and rich peasants) prevented

the establishment of cooperative farms, and although village councils were established everywhere, most of them were either molded according to local elites' interests or became dysfunctional due to factional strife between different castes, and classes. This chapter will demonstrate that due to its very limited success in establishing strong state-directed rural organizations, the Indian state did not acquire the capacity to mobilize the labor and financial resources of the rural population. Unable to mobilize unpaid labor and establish local funds for local projects, the development of physical infrastructure and human capital in the countryside depended almost entirely on the state's limited financial resources. The absence of effective taxation of agriculture, the largest sector of the economy up until 1990, aggravated this problem further.

Contrary to the popular interpretations that have portrayed the post-colonial India as a case of urban bias, I will show that in terms of taxation, subsidies, and fiscal spending, the Indian state did not have a significant urban bias. In fact, compared to its Chinese counterpart, it had a greater rural bias during much of the period between 1950 and 1990. Despite this, however, the reliance on the limited fiscal resources of the state placed significant limits on the development of physical infrastructure and human capital and thereby constrained the development of agriculture and rural industry. Under these circumstances, the colonial pattern of geographically narrow economic development continued without significant alteration during the post-colonial period. As in the previous period, the poor performance of the majority of the rural regions were able to cancel much of the gains made by the relatively advanced ones and thereby reduce the general performance of the country's rural economy to a low level. As a result, the rural economies of China and India diverged substantially between 1950 and 1990.

This chapter is comprised of eleven sections. The second section provides a historical account of the Indian leadership's goals with regard to the rural economy and the organizations they devised to achieve them, village councils and cooperative farms. The third section investigates the political struggles over these plans, which eventually led to the demise of the rural mobilization strategy in the late 1950s and early 1960s. The next two sections analyze the long-term consequences of this demise. The fourth section focuses on the consequences of the absence of rural labor mobilization by looking at the continuation of widespread underemployment in the countryside and the inability of government-financed rural employment programs to reduce it significantly and utilize surplus labor effectively. The fifth section investigates the negative impact of the absence of effective agricultural taxation on the fiscal power of the state. The sixth section then looks at the trajectory of government expenditure for the rural economy. It will show that the Indian government allocated a greater part of its budgetary expenditure to rural economic development than its Chinese counterpart did in the same period. We will see that what slowed the development of physical infrastructure and human capital in the countryside was the limitation of the government's fiscal power and the failure of its plans for village councils and cooperative farms rather than its alleged neglect of the rural economy. This analysis will help us understand the key difference between China and India: while the former achieved a level of development in physical infrastructure and human capital in the countryside that was far beyond the state's limited fiscal capacity because of its capability of mobilizing labor and financial resources of the villagers, the latter depended almost entirely on its limited fiscal power. The seventh and eighth sections, on physical infrastructure and human capital development, will document this outcome.

The ninth section briefly analyzes the consequences of these weaknesses by looking at the performance of the country's agriculture and rural industry between 1950 and 1990. I will take a closer look at the agrarian and industrial trajectory of some of the relatively advanced and underdeveloped rural regions. This brief regional comparison will demonstrate that the absence of state-led mobilization of labor and financial resources, and the resulting dependency on the limited government finances and private investment narrowed the geographical scope of rural economic development, as had happened in the colonial era. While the rural economies of a few relatively advanced regions continued to develop at a decent rate due to the initial strength of their private entrepreneurs (making large private investments and also attracting greater government investment through political lobbying), the underdeveloped rural regions continued to perform very poorly due to the weakness of private capital and the reliance on the state's limited fiscal resources. Since the latter group comprised a significant part of geographical and cultivated area and rural population, its dismal performance cancelled out much of the gains of the former and thereby kept rural India's economic performance at a low level compared to rural China.

The tenth section briefly examines Kerala's failure to develop its rural economy despite its successful social development programs and egalitarian land distribution. This was due, I will argue, to the continuing dominance of private enterprise and the absence of local labor and financial mobilization. The concluding section summarizes the findings of the chapter.

The Rise of a Rural Mobilization Strategy

The goal of establishing a rural organization with high mobilization capacity (based on village councils and cooperative farms) was the product of the convergence of ideas of

the Gandhian and Nehruvian wings of the Indian National Congress party. Mahatma Gandhi, the leader of the national independence movement who was assassinated in 1948, had a clearly rural-centric approach to national development. Inspired by old Indian traditions as well as rural cooperativization experiences in the West and Japan, Gandhi led a series of community development/village uplift campaigns during the last three decades of the independence struggle. Gandhian activists worked to organize villagers to construct and maintain basic infrastructure (latrines, schools, irrigation facilities, roads, etc.) through *shramdan* (voluntary unpaid labor). They also helped to establish credit, production, and marketing cooperatives for developing the livestock sector (primarily aimed to increase the production of milk and related products) and revitalize the country's *khadi* (spun cotton) and other rural industries. Gandhian activists carried out most of the work in the initial stages of the campaigns. The ultimate aim of the Gandhian village activism was to raise a new generation of leaders from within the villages who could assume the responsibility of organizing these activities in the long run (Frankel, 2005, pp. 37-38; Sinha, 2008, pp. 63-70).

Although these campaigns covered a tiny minority of the countryside and many of them did not last long, they helped to create a new generation of intellectuals and activists advocating the extension of this approach to the entire countryside after independence, some of whom took important posts in the Indian bureaucracy. For example, the well-known Gandhian economist, J. C. Kumarappa, became a member of the Planning Commission after independence. Kumarappa advocated a new economy based on multi-purpose cooperative societies that could organize the construction and maintenance of irrigation facilities and roads, soil conservation and manure production, and organize

agricultural credit, production, and marketing (Sinha, 2008, p. 68). Although Gandhi did not insist much on cooperative farming, Gandhian activists (cooperating with the Nehruvians on this subject) referred to his article published in *Harijan* on 15 February 1942 in which he wrote:

I firmly believe too that we shall not derive the full benefits of agriculture until we take to co-operative farming. Does it not stand to reason that it is far better for a hundred families in a village to cultivate their lands collectively and divide the income therefrom than to divide the land anyhow into a hundred portions? And what applies to land, applies equally to cattle. It is quite another matter that it may be difficult to convert people to adopt this way of life straightaway. The straight and narrow road is always hard to traverse...But only by surmounting difficulties can we hope to make the path easier (Gandhi, 1942; cited in GOI, Planning Commission, 1957, p. 184).

The supporters of Jawaharlal Nehru, the prime minister of India from 1947 until his death in 1964, constituted another, and apparently stronger, wing of the Congress that also advocated village councils and cooperative farms. Their perspective on national development was different from the Gandhians. They aimed to make India a strong industrial and military power rapidly. Inspired by Japan's and the Soviet Union's successful industrial catch-up strategies, the Nehruvians advocated a strategy of import substituting heavy industrialization. However, they were aware of the fact that neglecting the rural population was not an option in a country where agriculture provided over half of the GDP and three-quarters of employment. Similar to Japanese officials since the late 19th century and the Chinese and Soviet planners in the 20th century, they acknowledged that rapid and sustained industrialization required the supply of cheap food to the cities and the transfer of a part of the agricultural surplus to industry.

Although they did not share Mahatma Gandhi's ideological defense of rural industry, the Nehruvians viewed rural industrialization as an integral part of the industrialization drive. According to this viewpoint, meeting the consumer demand in the countryside through labor-intensive local industries would help combat inflation and save

the country's scarce capital resources for heavy industrialization. The Nehruvians also emphasized the need to modernize rural industries in order to transform them into ancillaries of large urban industries. As a result, rural industrialization became an integral part of the five-year plans made in the Nehru era (GOI, Planning Commission, 1962, pp. 16-17; Hanson, 1966, pp. 497-509; Frankel, 2005, pp. 498-500; Kumar, 1995, p. 10, 48; Streefkerk, 1985, p. 3). As we will see below in detail, they viewed village councils and cooperative farms as organizational means to remove the financial obstacles to the development of the rural economy through labor mobilization and self-finance. Despite their differences, the Gandhians and Nehruvians usually collaborated to put these plans into practice.

International inspirations

A brief look at the international experiences of rural organization that inspired the Indian leaders and officials will be helpful to understand the intellectual and political atmosphere of the time. Nehru had a keen interest in cooperative farming before independence. In his presidential address to the INC during its meeting in Faizpur (Maharashtra) on 26 December 1936, Nehru stated that after a land reform that would “remove the intermediaries between the cultivator and the state,” “*cooperative or collective farming* must follow” (Nehru, 1937, emphasis mine). As already mentioned, Western and Japanese farmer cooperatives influenced the Indian intellectuals and activists, especially the Gandhian circles. On the other hand, there was no country other than the Soviet Union having a collective farming system in 1936. Hence, Nehru's mention of collective farming along with cooperative farming as a legitimate option for India reveals that beyond his well-known interest in Soviet planning and industrialization, he viewed the Soviet

collective farms positively, at least to a certain extent. Other international experiences also attracted his attention in later years. One of them was the Israeli Kibbutz, a system of farming having the closest proximity to collective farming that has ever been established in a capitalist country. In 1959, which witnessed the most intense debates over cooperative farming in India, Nehru sent experts to Israel to learn more about the Kibbutz system (Gopal, 1984, p. 117).

Learning from China

On the other hand, the main interest and inspiration of Nehru and his supporters was the Chinese experience in the 1950s. In a letter written to chief ministers in 1954, Nehru expressed his awareness of the relevance of the Chinese experience for India:

We can learn much from the industrially advanced nations of the West. But we have always to bear this fact in mind, that our country is differently situated. Those Western countries have had 150 years or more of industrial growth. We lag behind in that respect like other countries in Asia and the problems we have to face are, therefore, different from the problems of those countries today. We are not going to have 100 years in order to make good. Our problems, therefore, are essentially similar to those of other under-developed countries in Asia. It is for this reason that I was particularly interested in China and said that the most exciting countries for me today were India and China. We differ, of course, in our political and economic structures, yet the problems we face are essentially the same. The future will show which country and which structure of Government yields greater results in every way (Nehru, 1988, pp. 72-73).

Many people in the party and the government shared this interest in China. Between 1952 and 1955, Nehru, the INC leaders, deputies of the Lok Sabha (national parliament), members of the Planning Commission, and the officials of the Ministry of Food and Agriculture visited China. These visits made a deep impression on them. In 1964, the head of the Planning Commission, P.C. Mahalanobis stated that “China provided a better model of development for India than the advanced western countries.” As we have seen in Chapter 3, China was experimenting with the elementary and advanced agricultural cooperatives at

that time. This created much enthusiasm among the Indian leadership. In a letter sent to the chief ministers of the Indian states on 30 December 1955, Nehru wrote:

From China, we have little to learn in regard to technology as we are probably more advanced. But both China and India are struggling with the same type of problems, agrarian and industrial, and both have huge populations...One of the most impressive things that is happening in China is the rapid growth of agricultural and industrial cooperatives. This is no doubt helped by the authoritarian regime there. But this is not an adequate explanation and we have to find out the other causes. What is the approach to this problem in China? How have they succeeded thus far? We have done much work in India in regard to cooperatives. But our success is still very limited... It is likely that we shall send a small team to China to study this and report to us (Nehru, 1988, pp. 330-331).

Soon after this statement, two separate delegations (of the Planning Commission and the Ministry of Food and Agriculture) visited China in 1956. After their visits, they published reports that singled out the mobilization of the previously underemployed villagers by the state-directed rural cooperatives as the main driver of rapid agricultural development in China (Ministry of Food and Agriculture, 1956; Planning Commission, 1957).⁶⁷

Rationales for state-led rural mobilization

After pointing out the Gandhian-Nehruvian cooperation and the international examples that inspired them, we can now have a closer look at the main rationales of establishing village councils and cooperative farms in India. First, cooperative farming was seen as a solution to the problem of small and fragmented landownership that is examined in the previous chapter. Land reform was thought as desirable for reducing the income inequality in the countryside. However, it was incapable of increasing agricultural productivity. According to the *Report of the Congress Agrarian Committee* in 1949,

⁶⁷ It is worthy of remembering that the transition from the elementary agricultural cooperatives to advanced agricultural cooperatives was continuing in China during the time of these visits. Hence, the term “cooperative” was used more frequently than the term “collective” at that time. This increased the comfort of the Indian leaders and officials since the former term did not imply the eradication of private ownership of the means of production and thereby helped their cooperative farming scheme to look less controversial.

uneconomic farms (that were incapable of providing full employment and a sufficiently high living standard to a family of five) comprised about half of all farms in the country. The committee proposed cooperative farming as the most effective institutional solution to the problem:

There is a popular belief that by consolidation of holdings, the evil of uneconomic cultivation can be met. While we do not minimize the importance of consolidation of holdings in rehabilitation of the agrarian economy, consolidation of holdings could never increase the size of the holding, though it will make the holding impact...Cooperative farming will go a long way to remove the evil of uneconomic cultivation (Congress Agrarian Reforms Committee, 1949, p. 50).

Second, both village councils and cooperative farms were seen as suitable organizational means to establish greater government control over rural labor, which would make its mobilization in capital construction projects throughout the countryside possible. In Chapter 1 and 2, we have seen that the combination of a large number of villagers under a small number of larger cooperative/collective organizations allows the transfer of the underemployed workers from farming to capital construction. As Ragnar Nurkse explains, in the context of disguised employment in the countryside of the underdeveloped countries the removal of a significant number of people from farming to construction work would not drop the agricultural output and the transferred workers will continue to have the same amount of food on the table and share the same house with their family members as before. For this reason, if the national governments manage to mobilize these workers in capital construction projects, they will not need to pay wages at all or pay very little to the workers (Nurkse 1952 [1967], pp. 37-38). In his famous work titled *Asian Drama*, Gunnar Myrdal proposed a similar strategy for South Asia (Myrdal, 1977). Chapter 2 has demonstrated that the Chinese leadership had a similar perspective and opted for a transition first to cooperative and later on to collective farming primarily for mobilizing the underemployed

rural masses in capital construction projects rather than group farming per se. By decreasing the reliance on government spending, long-term and large-scale labor mobilization enabled the country to achieve a significant level of infrastructural development that was far beyond the limited fiscal power of the state. It also enabled greater state spending for industrialization.

Nehru was perceptive of both the general theory and the implications of the Chinese practice. As Gopal notes, “Nehru considered, apart from efforts to give greater vitality to community development and to make the peasants self-reliant, the adoption of Gunnar Myrdal’s suggestion of compulsory social service for young men and women” (Gopal, 1984, p. 109). Moreover, after criticizing the agricultural ministers of the states of India for taking “it for granted that additional increase in agricultural production cannot be had unless additional funds are available,” Nehru referred to the case of China “where millions of cooperative farms have sprung up.” He explicitly acknowledged that despite its greater urban and industrial bias, Chinese agriculture was performing better than India:

How then, are we to increase this production? We know for a fact that some other countries have rapidly increased their food production in the last few years without any tremendous use of fertilizers. How has China done it? China’s resources in this respect are not bigger than ours. *China is at the same time laying far greater stress on industrial development and heavy industry than we are. Yet, they are succeeding in increasing their agricultural production at a faster pace than we are.* Surely, it should not be beyond our powers to do something that China can do (Nehru, 1988, p. 394, emphasis mine).

The Planning Commission supported this view by referring to the Indian delegations’ reports on China which showed that “agrarian reorganization and mobilization of idle manpower” helped there to attain significant increase in output without greater government spending than India (Frankel, 2005, pp. 138-139). The mobilization of underemployed villages during agricultural slack seasons was one of the underlying goals of the rural policy in the late 1940s and 1950s (Gopal, 1984, pp. 109-121).

Third, both the village councils and cooperative farms were thought as the organizational means to mobilize the financial resources of the rural population. Agricultural taxation and price scissors (significant underpricing of the agricultural products vis-à-vis the industrial ones) constituted the main mechanisms of financial mobilization in China. Indian planners were enthusiastic to use both to finance industrialization both in the cities and the countryside. In the early 1950s, the Planning Commission repeatedly called for significant increases in the rate of agricultural tax. It also supported the establishment of government monopoly over the foodgrains trade in order to be able to use the scissors mechanism. Amalgamating a large number of households under a small number of collective organizations enabled the Chinese state to collect tax and grain effectively since the mid-1950s. Indian planners were aware of this fact and pursued the same goal when pushing for the establishment of village councils and cooperative farms. They aimed to convert sixty million farm households into about 300,000 village organizations in order to collect tax and grain from them easily (Frankel, 2005, pp. 124-125; Gopal, 1984, p. 109).

Moreover, as we have seen in the Chinese case, establishment of local funds for local agricultural and industrial projects is another form of agricultural taxation that helped to reduce the reliance on government spending further. This was among the goals of the Indian rural policy. In 1949, the Congress Agrarian Reforms Committee suggested that in the cooperative farms established in the near future “a sum of not less than 25% of the net profits should be carried to the reserve funds every year” (Congress Agrarian Reforms Committee, 1949, p. 57). In fact, the Community Development Program (CDP) that was launched in 1952 budgeted only one-third of the costs of its ambitious plans for rural capital

construction. Villagers were expected to cover the rest through mobilizing their labor and financial resources. The administrative units (at the village, block, and district levels) established by the program were called to make efforts to raise their own resources (Frankel, 2005, pp. 102-103). In addition to the efforts to obtain voluntary contributions,⁶⁸ it was underscored that village councils should also be capable of using compulsory methods to obtain the required sources when the voluntary contributions were insufficient (Hanson, 1966, p. 406).

Finally, the Indian planners aimed to organize the economic activities of the entire rural society in accordance to the five-year plans. This was a formidable task for a large country with significant regional variation. The private character of India's rural economy increased this difficulty further. The establishment of village councils and cooperative farms that were closely connected to the state would make the attainment of this difficult goal relatively easier. In the 1950s and 1960s, the central and state governments called the village, block, and district councils to prepare plans with regard to local production, consumption, and investment. The ultimate goal was to link these plans to the central plan to the extent possible (Hanson, 1966, pp. 406-418).

The steps taken towards state-led rural mobilization

However, the developments of the 1950s and early 1960s proved that having good desires and plans is hardly enough to put them into practice. As in radical socio-economic transformations elsewhere, even a serious land reform, let alone the establishment of strong

⁶⁸ An evaluation report on the Community Development Program in Haveli block in Maharashtra succinctly explained the close link between the limitation of the government's fiscal power and the necessity of popular participation: "The needs of the villagers were many; the finances were limited. Important as the size of the financial allocations to the different items of rural development were, the more significant were the development efforts put in by the extension staff to bring out the most fruitful results out of the given allocations by inducing popular involvement in development activities" (Inamdar, 1962, p. 28).

village councils and cooperative farms working in accordance to central plans conceived by Nehru and the planning bureaucracy, required a great deal of conflict. In fact, the fate of the rural reform was determined by the debates and struggles both inside and outside the INC, which were closely related to actual socio-economic contradictions within the rural society.

We should start with a reminder that as soon as the national independence was achieved, the Communist Party of India (CPI) started an armed peasant insurrection in its strongholds in Telengana (in the eastern part of Hyderabad), West Bengal, Tamil Nadu, and Bombay. Between 1948 and 1951, the party established “village soviets” and waged armed attacks against landlords and government forces. The military units dispatched by the state governments and the central government suppressed this insurrection. On the other hand, although the CPI proved to be incapable of taking power, it continued to be a significant political force in the countryside (Hanson, 1966, p. 248; Frankel, 2005, p. 64). Hence, in addition to the above-mentioned international context/inspirations, the presence of a strong communist organization in the countryside should be taken into account in order to understand the leaders and planners’ quest for a radical rural reform and to establish village organizations under state control in the late 1940s and the 1950s.

The Indian state’s effort to establish a strong rural organization that could mobilize labor and financial resources of the villagers led to two main reforms. The first was the launching of the Community Development Program (CDP) and the establishment of the National Extension Service (NES) in the early 1950s, which aimed to establish a strong administration at the village level and above. The second reform was the establishment of cooperative farms in the late 1950s.

Community development and the panchayat system

The launching of the Community Development Program in 1952 was a milestone of the post-colonial state's attempt to develop the rural economy through establishing strong local administrations with capable cadres. Compared to the cooperative farming scheme that is examined below, the CDP had a more pragmatic approach. It did not put property relations, income distribution, and farming systems at the forefront and proceeded with maximum class and political conciliation. This was further reflected by the involvement of the Indo-American Economic and Technical Cooperation Agency and the Ford Foundation in the program. Besides making financial contributions, these institutions also assumed important responsibilities in staff training and the implementation and evaluation of the CDP.⁶⁹ CDP organized the countryside around a three-tiered administrative structure. The upper tier was the *unit*, which approximately covered an area of 400-500 square miles, 300 villages, and a population of 200,000. Each program unit was divided into three *development blocks*, including about 100 villages and 60,000 people. Development blocks were further divided into *blocks* of five villages. In 1953, the National Extension Service (NES) was established. The NES aimed to spread modern agricultural methods and technologies in the country. It assigned one village-level worker (VLW) to each block of five villages in order to carry out rapid and effective agricultural extension (Frankel, 2005, pp. 102-103; Hanson, 1966, pp. 400, 411, 420-421; Planning Commission, 1962, p. 3; Sinha, 2008, p. 75).

The administrative framework laid out by these programs was developed further in later periods. In 1957, the Indian government appointed a committee headed by Balwantrai

⁶⁹ On the Ford Foundation's involvement in the CDP see Staples, 1992, pp. 7-14.

Mehta to examine the CDP and NES and propose ways to improve their performance. The committee recommended to revitalize/reconstruct rural India's old panchayat (council) system on a modern basis. The system organized rural administration around a three-tiered structure of elected councils. The upper tier was the *district* administered by a district council (*zila parishad*). The medium tier was the block having its own council (*panchayat samiti*). The third and the basic tier was the village, administered by a council (*gram panchayat*) elected by popular vote. The elected village headman (*sarpanch*) would be responsible for all administrative and development activities in coordination with the block and district councils. These organizations were expected to play a leading role in mobilizing labor and financial resources of the villagers to construct and maintain infrastructure and organize the local economy on a cooperative basis (Frankel, 2005, p. 24, 178).⁷⁰ All states gradually adopted this system in the 1950s and 1960s. VLW continued to be responsible for agricultural extension services within a group of five villages.

Cooperative farming

The second major reform to mobilize labor and financial resources of the villagers was the establishment of cooperative farms. Nehru had advocated starting in 1936. The *Report of the Congress Agrarian Reforms Committee* was an important step towards this direction. The committee was appointed in 1947. J. C. Kumarappa, the famous Gandhian economist, chaired the committee. The committee's report was published in July 1949, in the midst of the communist-led insurrection in the countryside. It was "the first major product of socialist-Gandhian collaboration on an outstanding public issue after

⁷⁰ For a detailed expression of the expectations from the councils with regard to economic development, see Dharampal, 1972.

Independence” (Frankel, 2005, p. 68).⁷¹ It stated that both capitalist and collective agriculture had the potential to increase agricultural productivity but neither of them should be adopted. Capitalist agriculture was not suitable due to its exploitative and polarizing character. The committee also recommended various restrictions on private landownership including the prohibition of subletting, allowing the sale of land only in certain conditions, and supervision of the individuals’ use of land by the state. Collective agriculture was also rejected on the grounds that it would subordinate the peasants to technocrats.

As an alternative to capitalist and collective farming, the report “recommended *compulsory co-operative joint farming* for cultivators whose holdings are below the basic size and who form about 40 to 50 per cent of Indian cultivators, and some form of *compulsory cooperative better farming* for the rest” (Congress Agrarian Reforms Committee, 1949, p. 50, emphasis mine). The report’s definition of “cooperative joint farm” was very similar to the elementary agricultural cooperatives in China between 1952 and 1956. Private landownership was retained. Peasant households were called to pool their land and other means of production, which was expected to allow more efficient farm organization. Income would be distributed according to labor and capital (land, tools, and finance) contributions of the participating peasants. The committee recommended that labor contribution should be the largest determinant of income distribution and the dividend to be paid for each household’s land and other capital contributions should not exceed 4% of the net income of the cooperative farms. Hence, an increasingly egalitarian distribution of income was intended.⁷² Although the committee allowed limited

⁷¹ Here, the term “socialist” refers to Nehru and his supporters.

⁷² Strikingly enough, the committee criticized the Soviet collectives for allocating too much land to individual use of the collective members. Similar to what the Chinese collectives (that were established a few years after the publication of this report) did, the committee recommended to limit the size of household plots: “As

experimentation with very large farms (about 400 to 500 acres), it recommended the medium-sized farms (about 12 to 20 hectares) to be the general rule in cooperative joint farming in order to keep the members' incentives high (Congress Agrarian Reforms Committee, 1949, pp. 54-56).

The concept of "cooperative better farming" referred to the establishment of multi-purpose cooperative societies in every village. These cooperatives were expected to "tackle credit, better farming, marketing of agricultural produce, cattle, welfare, organization of suitable agro-industries and supply of consumers' goods." On the other hand, the committee recognized the elite capture of the existing village cooperatives established before 1947 as a widespread phenomenon. It also expected that cooperative farming would empower the non-elite peasantry. Hence, in order to tilt the balance of power in favor of the non-elite farmers more and thereby to widen the social scope of rural development, the committee recommended that the members of the cooperative joint farms should also become members of the village cooperatives along with individual farmers (Congress Agrarian Reforms Committee, 1949, pp. 60-61).⁷³

one of the objectives to be attained in the constitution of the future agrarian pattern is to develop the individual personality of the peasant we think that good results may be achieved if the farmers are allowed to have some homestead land where they can raise their kitchen garden vegetables and some personal requirements, like tobacco, pepper and other things. We are, however, opposed to allowing any farmer to pool a part of the holding into a cooperative joint farm and to keep the rest under individual cultivation. In Russia, years after the Revolution, when members of the collective farms were allowed to have homestead farms, collective farms began to be neglected. In some cooperative experiments we found that farmers did not give as much attention to the lands pooled in the cooperative farms as to the lands under their personal cultivation. A cooperative joint farming would be an essential feature of the future agrarian pattern and its early success would greatly determine the future progress of this type of farming, care should be taken so that nothing may detract from its attaining full momentum" (Congress Agrarian Reforms Committee, 1949, pp. 59-60).

⁷³ "We have found in the course of our tours that the multi-purpose cooperatives in many places are the instruments for the domination of the illiterate peasantry by a handful of better equipped and better placed agriculturists. The distribution of better seeds, implements, manure and other agricultural requirements through the multi-purpose society has not worked to the benefit of all alike. The organization of small cooperative farms would to a great extent remove this difficulty. The small peasants would be in a position to formulate their demands and give a better shape to their ideas about agricultural improvements in the meeting of the multi-purpose society. In the absence of such an organization, the meeting of a multi-purpose

Finally, the report recommended the compulsory organization of cooperative farms and multi-purpose village cooperatives. It also suggested the use of coercive methods if necessary:

There should be vigorous publicity of the achievements of the cooperative joint farms among the peasantry. After a period of two to five years there should be a review of the position and if it is found that the voluntary effort in cooperative joint farming has not achieved any perceptible result, there should be greater recourse to the method of compulsion. We are confident that in course of time through proper direction, supervision and guidance, the Indian peasantry would take to the small co-operative joint farms and there would be very few occasions to resort to compulsory co-operative farming (Congress Agrarian Reforms Committee, 1949, p. 52).

Two members of the committee, N. G. Ranga and O. P. Ramaswamy Rediar, rejected the recommendations of the final report. In their “Minute of Dissent,” they supported the establishment of multi-purpose village cooperatives but expressed disapproval with regard to the compulsory organization of cooperative joint farms. They also objected to large-scale land distribution to provide land for cooperative farms and instead suggested the distribution of state lands to landless peasants who wish to experiment with cooperative farming. They also recommended leaving the policy planning and implementation to state governments (Congress Agrarian Reforms Committee, 1949, pp. 193-195).

This was an early version of the standard elite opposition to the rural mobilization strategy in India. As the committee report recognized, the progress of cooperative farming would be very difficult and slow in the absence of compulsory methods and radical land reform. Keeping the multi-purpose village cooperatives as the only form of cooperation would support the continuation of the existing pattern of socially narrow development. Finally, leaving the entire initiative to state governments would be the best way to dilute

society becomes a babel of tongues which gives an opportunity to the more substantial section of the village in pushing their own interests” (Congress Agrarian Reforms Committee, 1949, pp. 65-66).

the reform because the rural elites had greater influence on state governments than the central government. It was no coincidence that both Ranga and Rediar had large landholdings. They also held important administrative positions in the past. Rediar was the ex-premier of Madras. Ranga was the ex-president of All-India Peasants Union (*Kisan Sabha*) until the communists gained the control of the organization in 1942. Hence, their opposition to the report clearly reflected the rural elites' opposition to cooperative farming. The report was accepted by a majority vote of the Gandhian and Nehruvian committee members (Frankel, 2005, pp. 62, 68-70).

Although the recommendations of the report remained largely unlegislated and unimplemented, it set the tone and terms of the policy debates of the next decade. Village cooperation was strongly emphasized by the First Five Year Plan, which paved the way for the CDP. Cooperative farming was not emphasized for a few years following the launching of the CDP. This quickly changed in the second half of the 1950s during which the limitations of the CDP and related organizations, to which I will turn below, started to become evident. Nehru and his followers started to think that although "the increasing utilization of manpower" was needed, the CDP was incapable of achieving it since it had "lost its original drive and become increasingly an official organization." Hence, "there was need for fresh initiative and impetus" (Gopal, 1984, p. 118). The inspiration for the fresh initiative came from China through the above-mentioned official visits and reports on China's rural organization. In its report published in May 1957, the Planning Commission's delegation to China stated: "For the next four years, we suggest that a programme of organizing about 10,000 cooperative farming societies should be drawn up. The objective should be to have at least one co-operative farming society for a group of 50

villages by 1960-61” (GOI, Planning Commission, 1957, p. 186). Nehru had become less patient and decided to put his political weight behind a concrete effort to establish cooperative farming.⁷⁴ During the 64th session of the INC that convened in Nagpur (Maharashtra) on 10 January 1959, a resolution in favor of cooperative farming was accepted. Although there were previous party and state reports recommending it, the Nagpur Resolution was the first document that made cooperative farming the official policy of the ruling party. The document started with a reiteration of the goal to make the village councils and cooperatives the basis of the organization of the entire rural economy:

The organization of the village should be based on village panchayats and village cooperatives...All permanent residents of the village, whether owning land or not, should be eligible for membership of the village cooperative which should promote the welfare of its members by introducing progressive farming methods and improved techniques of cultivation, developing animal husbandry and fishery and encouraging cottage industries...Both the panchayat and the cooperative should be the spearheads of all developmental activities in the village and...should encourage intensive farming with a view to raising the per acre yield of agricultural produce (INC, 1959, p. 3).

A short and long term action plan for the transition to cooperative farming was proposed:

The future agrarian pattern should be that of cooperative joint farming, in which the land will be pooled for joint cultivation, the farmers continuing to retain their property rights, and getting a share from the net produce in proportion to their land. Further, those who actually work on the land, whether they own the land or not, will get a share in proportion to the work put in by them on the joint farm. As a first step, prior to the institution of joint farming, service cooperatives should be organized throughout the country. *This stage should be completed within a period of three years* (INC, 1959, pp. 3-4, emphasis mine).

This ambitious goal raised the obvious question of from where the lands of cooperative farms would be obtained. Although not stated explicitly, the resolution seemed

⁷⁴ On 12 August 1956, Nehru wrote to the chief ministers: “Even as I write this, a delegation of ours is visiting China to enquire especially into the very rapid growth of cooperatives there. Within two or three years, millions of cooperative farms have sprung up there. Now, they are being converted into collectives. We do not want to go in that direction. But the forces at work which are driving China in that direction, a vast agricultural population, the need for greater production, etc.- are at work in India, and we have to find some solution. After a great deal of thought and consideration of this problem, we have definitely come to the conclusion in the second Five Year Plan and, indeed, in the earlier one also, that we must have cooperative farming. At this stage, for anyone to challenge this surprises me” (Nehru, 1988, pp. 392-393).

to imply that peasants with uneconomic holdings would come together to establish these farms. On the other hand, it formulated a land ceiling reform to supply land to cooperative farms:

In order to remove uncertainty regarding land reforms and to give stability to the farmer, ceilings should be fixed on existing and future holdings and legislation to this effect, as well as for the abolition of intermediaries, should be completed in all states by the end of 1959...Such surplus land should vest in the panchayats and should be managed through cooperatives consisting of landless labourers (INC, 1959, p. 4).

The resolution also called the establishment of state monopoly over foodgrains trade and a mass effort for land reclamation. It concluded with a call to central and state governments and all party organizations “to mobilise mass enthusiasm and arouse initiative and a spirit of self-help in the millions of farmers in the country” (INC, 1959, p. 4).

The Rapid Demise of the Rural Mobilization Strategy

The strategy that is examined above was never put into practice at a meaningfully large scale. Three different factors – the influence of the rural elites on the state and party organizations at the central and local levels, caste and class divisions within the villages, and India’s federal and multi-party system seem- to play important roles in this outcome. The retreat from the strategy took two main paths. The cooperative farming scheme faced strong outright opposition of the rural elites and could not be extended to large areas. On the other hand, since the panchayat system was formulated in class neutral and uncontroversial terms, they were extended to the entire country. However, in stark contrast to the Nehruvian officials’ expectation to turn them into organizations mobilizing labor and financial resources of the entire rural population in a generally self-reliant manner, village councils turned into exclusionary organizations that relied on and channeled government funds to dominant castes and classes.

We will start with cooperative farming, which has been the most controversial rural policy in the history of modern India and caused the first major split within the Congress party after independence. An effective land ceiling reform would certainly lead to the confiscation of much of the land owned by the big landowners. The distribution of the land obtained through the ceiling reform to the landless peasants organized tightly under cooperative farms, if implemented seriously, might increase the confidence of this class. Besides its short-term results, the demonstration effect of a sudden empowerment of the low-caste landless peasantry might pose a significant long-term threat not only to the old-style, rentier landlords of the less advanced agricultural regions but also to the middle and rich peasants in relatively advanced areas (Gopal, 1984, p. 119; Frankel, 2005, p. 164).

Furthermore, although the Nagpur Resolution did not include any decisions with regard to the urban economy, urban industrialists and financiers also did not welcome it. Their economic interests had not always converged but urban and rural elites had coexisted with a high degree of mutual understanding and harmony. One reason seems to be the kinship relations between the two classes due to the landlord and rich farmer background of some of the urban capitalists (Mitra, 1977, pp. 103-104). Another reason was the political weakness of the urban bourgeoisie, which had forced it to rely on the rural elites in terms of maintaining a sufficient degree of political stability since the colonial period. Moreover, an egalitarian transformation of the property relations in the countryside might also have a demonstration effect in the cities. Urban capitalists therefore had good reasons to fear from the opening of the Pandora's box in the countryside. Finally, although the Nehruvians had never failed to express their prioritization of pragmatism over ideological thinking, accepted US financial assistance, and welcomed the involvement of the Ford

Foundation and similar institutions in rural development programs, their enthusiasm with regard to the Chinese agrarian organizations was a source of anxiety for the urban and rural elites alike.

For these reasons, the Nagpur Resolution “sounded a clear danger signal not only to the landlords and traders within the Congress party, but also to the industrial and financial elements” (Frankel, 2005, p. 164). Hence, the rise of a significant opposition to the Nagpur Resolution was not surprising. In a polemical piece published on 14 February 1959, Chakravarti Rajagopalachari (a prominent leader of the Congress party who served as the last Governor-General of India between 1948 and 1950) condemned Nehru’s Congress for trying to establish collective farms as in the ones in China and the Soviet Union, suppression of free enterprise and individual liberties, and contradicting with its commitment to work with the US and UK in the Cold War (Rajagopalachari, 1959). Rajagopalachari and similar-minded people left the INC and founded the Swatantra (Freedom) Party on 4 June 1959. The party was headed by N. G. Ranga, one of the two members of the Congress Agrarian Reforms Committee who rejected its final report recommending cooperative farming. Rural elites (including former zamindars and princes) had a strong presence in the party organization. It received 7.9% and 8.7% of the popular vote in the general elections of 1962 and 1967, respectively. During this period, it was the main opposition party in Bihar, Gujarat, Orissa, and Rajasthan. Although the Swatantra Party’s power gradually decreased in the later period (it received 3.1% in 1971 general elections), its opposition certainly weakened the INC (Brass, 1990, pp. 76-83; Sharma, 1979). Moreover, the Hindu right represented by the National Volunteer Organization (Rashtriya Swayamsevak Sangh, RSS), and the Indian People’s Association (Bharatiya Jan

Sang or simply, Jan Sangh) also opposed cooperative farming aggressively (Frankel, 2005, pp. 207-209; Gupta, 1959, pp. 935-936).

Some of the staunchest opponents of the Nagpur Resolution, however stayed in the INC longer. The most prominent of them was Charan Singh. In his book titled *Joint Farming X-Rayed: The Problems and Its Solution*, published soon after the Nagpur Resolution, Singh argued that private farming is superior to cooperative and collective farming because of the difficulty of labor supervision and insufficiency of economic incentives in the latter (Singh, 1959). In 1967, Singh left the INC and founded his own party, Bharatiya Kranti Dal (BKD), which became the Bharatiya Lok Dal (Indian People's Party) later on. With the support of the Congress dissidents, he became the Chief Minister of Uttar Pradesh (the most populous and therefore the key state in the country's electoral system) in 1967 and ruled it until 1970. Singh's BKD, the Swatantra Party, and the Jan Sangh formed the Janata (People's) Party which came to power after the 1977 general elections. Singh served as the prime minister of India between 1977 and 1979.

In short, the opposition to cooperative farming led to the first major political split in the Congress party in the post-independence period and made the implementation of cooperative farming very difficult. Moreover, since the federal system of the country defined agriculture as a state subject, effective implementation of cooperative farming depended on the will of the state governments. The ruling elites had greater influence on state governments than the central government and were capable of shaping the trajectory of cooperative farming scheme at the local level.⁷⁵

⁷⁵ In a perceptive analysis that was published immediately after the Nagpur Resolution, K. S. Gill correctly predicted that "left to themselves, some State governments may just refuse to enact the necessary legislation, and most of the rest may leave enough loopholes for the landlords to escape" (Gill, 1959, p. 223).

The sudden deterioration of China-India relations helped the opponents within and outside the INC to gain the upper hand. The Tibetan uprising against China and its suppression raised the tensions in the China-India border in the autumn of 1959. The growing tension led to a war in 1962. China's swift victory humiliated India and decreased Nehru's prestige significantly. Since the cooperative farming scheme's inspiration from China was obvious, the new situation gave its opponents the opportunity to add a strong nationalistic flavor to their arguments. This undermined the power of the Nehruvians significantly.⁷⁶

These factors blocked the implementation of the policy. Ceiling reform proposed by the Nagpur Resolution was not put into serious practice. As a result, very little land was obtained to distribute to landless peasants to let them establish cooperative farms. The experiences of the 20th century demonstrate that establishing cooperative or collective farms on a meaningfully large scale is impossible without strong state support and supervision. This remained lacking in India. Since the ceiling regulations did not apply to cooperative farms, some of the big landowners established bogus cooperative farms to avoid confiscation. Some of the ordinary peasants also took the same road in order to benefit from the government's financial support to cooperative farming schemes. The number of cooperative farms increased from 1397 in 1957 to 8160 in 1969-70 and 9480 in 1978-79. The net sown area under cooperative farming rose from 206,000 hectares in 1960-61 to 354,000 hectares in 1978-79. These figures would be misleading and in order to get

⁷⁶ In an interview in 1964, the director of the Land Reforms Division of the Planning Commission explained this situation succinctly: "We had been emphasizing 'look at the Chinese cooperatives, see how wonderful they are' and after Tibet, everything Chinese became taboo. Even those persons who still believed cooperative farming was the best sort of organization dared not to say it. Only the prime minister could say it, but hardly anyone else" (Frankel, 2005, pp. 167-168). Between 1962 and his death in 1964, Nehru lacked the confidence and power to insist on it.

a clear picture we should look at the share of cooperative farms within all farms. In 1978-79, all cooperative farms (including the bogus ones) comprised only 0.3% of the country's total cultivated area (Haque & Sirohi, 1986, pp. 208-211). In sum, cooperative farming could not be established in India due to the strong opposition of the rural elites. As a result, private sector had controlled over 97% of the agricultural sector until 1990 (Nagaraj, 1991, p. 1003). In Chapters 2 and 3, we have seen that Chinese agriculture was organized around collective farms until 1982. Instead of establishing a completely private landownership and farming system, the establishment of the Household Responsibility in the early 1980s brought a transition from a completely collective to a semi-collective landownership and farming system in China. In short, private sector's presence in agriculture had been significantly higher in India than China between 1950 and 1990. Hence, China's better agricultural performance than India during these four decades *cannot* be explained based on greater private sector presence or performance.

The panchayat/council system had a different but not entirely dissimilar trajectory. Rural India had panchayat organizations over centuries. Since the idea of local governance by councils did not necessarily imply any radical change in class and property relations, in the late 1950s and 1960s all states of India made laws establishing councils at the district, block, and village levels.⁷⁷ Also, the CDP that was based on the councils provided significant financial support to the rural economy and was therefore generally welcomed. However, the village councils and cooperatives that emerged in the 1950s and 1960s turned out to be radically different from the original expectations of the Indian planners for two

⁷⁷ In 1978, the gram (village) panchayats covered 98.9% of the rural population but panchayat samitis covered 80.7% of all blocks and zilla parishads covered 62.9% of all districts (Mehta, 1984, p. 100). Hence, the formal establishment of the panchayat institutions could be completed only at the village level and cannot be considered an unqualified success.

main reasons. First, caste and class based factionalism prevented the emergence of local leaders capable of mobilizing all villagers. Second, different castes and classes conflicted over the distribution of government funds allocated to rural development projects. Besides making village-wide mobilization very difficult, it also made elite capture of the village councils and cooperatives a widespread phenomenon everywhere including the councils in West Bengal under the control of the Communist Party of India-Marxist (CPI-M) after 1977 (Hanson, 1966, p. 523; Mallick, 1993, pp. 124-170).

Evaluation reports with regard to the CDP in different states underscored the widespread character of these problems. In Bihar, it was reported that the benefits “were not equally distributed and the laboring groups seem to have benefited the least.” In Bombay, village-level workers employed by the National Extension Service were reported to help only a few rich cultivators. The Dalit villagers were denied access to wells dug by the CDP funds. A similar observation was made for West Bengal. The evaluations at the national level also underscored that upper castes and classes benefited from the projects much more than others (Sinha, 2008, pp. 76-78). In contrast to the official expectations, due to their narrow social basis local organizations were generally incapable of mobilizing the unpaid labor power and financial resources of the villagers. In fact, in the greater majority of the country the peasants did *not* view the CDP and related schemes as their own program in which government funds can fulfill only a complementary role. As mentioned above, the CDP set high targets for infrastructural development, budgeted 30% of them, and expected the villagers to complement the remaining 70% through cooperation. This sort of cooperation did not take place in the great majority of the countryside (Hanson, 1966, p. 404, 424).

In sum, the combination of the influence of the rural elites in central and local politics, caste and class based factionalism within the villages, and the country's federal and multi-party system failed the Indian state's attempt to establish a strong and nationwide rural organization capable of mobilizing the villagers' labor and financial resources for rural development. The development of rural infrastructure depended primarily on the availability of government funds.

As we will see below, in a few relatively advanced regions where private entrepreneurs had sufficient funds to invest in infrastructure and technology, the combination of government and private spending resulted in dynamic growth. However, private capital was very weak in the great majority of the countryside. The reliance of government funds and the absence of local mobilization constrained economic development in these regions.

The Weakness of Labor Mobilization in the Countryside

We can now turn to the long-term consequences of the rapid demise of the rural mobilization strategy in India in the late 1950s and early 1960s. This section will look at the absence of the use of unpaid labor.

Female participation into rural labor force

As Chapter 2 has demonstrated, long-term and large-scale labor mobilization in China required a significant increase in the labor force participation rate of the female villagers. For this reason, both the party-state and rural collectives carried out intensive political activity against the social norms that had prevented the participation of the female villagers in farm work and other economic activities outside the household. The success of this effort increased the size of the total rural labor force and made possible the transfer of

a significant number of laborers to construction work (during the slack season and in many local cases for longer periods) without a drop in the existing level of agricultural production. In short, increasing the female labor force participation appears as a precondition of a successful labor mobilization strategy.

A comparable level of party and state effort was not present in the Indian countryside in the same era. As Table 32 demonstrates, the female labor participation rate continued to be significantly lower than that of the males. As a result, China's female labor participation rate (47%) was more than twice that of India (19.8%) in 1981-82 (Jose, 1989, p. 2). Although this data does not provide a rural-urban breakdown, since rural population comprised about 80% of the total population in both countries at that time, it reflects the situation in their rural regions well.

Table 32. Labor Force Participation Rates (%) in Rural India, 1972-1983

	1972-73		1977-78		1983	
	US	CDS	US	CDS	US	CDS
Male	64.6	58.0	64.9	56.1	64.2	55.4
Female	37.7	25.2	39.3	21.6	39.1	21.8

Source. Duvvury, 1989, p. 69.

Note. US refers to usual status and CDS refers to current daily status of employment of the rural laborers.

Rural employment programs

A closer look at the rural employment programs in India will help us to assess the real magnitude of the employment problem and the state's "inability to solve it through fiscal spending. The central government launched numerous rural employment programs under different names starting in 1960. The Rural Manpower Utilization Program (1960), Crash Scheme for Rural Employment (1971), Pilot Intensive Rural Employment Project (1972), National Rural Employment Program (1977), and The Rural Landless Employment

Guarantee Program (1983) were some of the largest and well-known programs.⁷⁸ In addition, state governments also implemented their own programs. The Maharashtra Employment Guarantee Scheme (MEGS), launched in 1972, was considered as the most successful of them in terms of coverage and duration due to the state government's allocation of significant funds to it.

A comparison of these employment programs with rural employment in China shows their limitations. The case of the MEGS is illustrative in this regard. Urban taxpayers (who were told by the Maharashtra government that the program would help limit rural to urban migration) financed the project entirely. Although the project employed the villagers in capital construction schemes, its primary goal was poverty alleviation rather than capital construction. The program paid the villagers slightly less than market wage in 1976-77 and more than the market wage in 1989-90. Although the MEGS was the largest and most generous state government-sponsored rural employment program, using a limited tax base to provide wage employment turned out to be insufficient to solving the rural underemployment problem. In 1987-88, the program employed 520,000 (2.5%) of Maharashtra's 21.2 million rural workers. The program was estimated to provide employment to about one-fifth of the total unemployed and underemployed population in the state in 1977-78 and to less than one-third in 1987-88. In short, even the most generously funded and successful local scheme was incapable to absorb the underemployed villagers (Dev, 1995).

⁷⁸ The Mahatma Gandhi National Rural Employment Guarantee Act of 2005, which launched India's largest rural employment program to date, is the most recent of this long chain of central government-sponsored programs.

In West Bengal, the Rural Reconstruction Program and the Rural Works Program created 56.63 million and 70 million days of employment in 1978-79 and December 1979, respectively. Four million farm workers benefited from this program. Hence, on average each worker received 17.5 days of employment a year. Workers received 4 Rs per day, which was below the legal minimum wage (8.10 Rs per day) but above the market wage rates in the off-season. Farm workers did not have work for at least 210 days in this agriculturally backward region. Hence, government-financed wage employment creation was entirely inadequate for solving the problem of underemployment.

These programs contributed very little to the development of local infrastructure for two reasons. First, since they entirely depended on government spending, construction works stopped immediately after the exhaustion of the funds. Second, the government did not have sufficient capacity of work supervision. For instance, in one block in Nadia “although checks were officially applied at every stage still malpractices like false entries of names in the muster rolls, insufficient work than prescribed were reported ...Even if some workers did not work up to the prescribed extent, they managed to get the certificate of satisfactory work.” As a result, in 1978 the Irrigation Minister of the state admitted that most of the embankment repairs done during these programs were useless and required to be redone. The projects also failed to stop the decay of the ponds and tanks (Mallick, 1993, pp. 143-144). The Maharashtra program’s performance in the realm of capital construction was also modest (Dev, 1995).

Central government schemes shared similar limitations. For example, the Rural Manpower Utilization Program, the country’s first large-scale rural employment program (which was based entirely on central government funding) planned to employ 100,000

people in 1961, 500,000 people in 1962, 1 million in 1963, and 2.5 million in 1964-65. It was intended to provide 100 days of work to each employed person each year (Donovan, 1973, pp. 4-5). It is important to note that the program had significant publicity due to its broad coverage. Hence, by 1964-65 the Indian government was capable of employing a maximum of 2.5 million people in capital construction projects through fiscal spending. In contrast, Chinese rural collectives mobilized *at least* 30 million villagers in capital construction projects (out of a total rural labor force of 235.34 million people) in 1964-65 and *at least* 40 million villagers (out of a total rural labor force of 244.5 million) in 1965-66. Achieving this level of coverage was obviously impossible in India, where the employment programs depended on government expenditure.

Furthermore, the National Rural Employment Program, another central government scheme given much publicity, generated 1.11 million individual days of rural employment per day in India in 1980-85. In March 1980, on any typical day 15.36 million people were unemployed in the countryside. Hence, the program provided only 7.2% of the needed rural employment (Bandyopadhyay, 1989, p. 98). In contrast, as Chapters 2 and 3 show, Chinese collectives and local governments mobilized *at least* 120 million villagers in 1976-77 and 56 million villagers in 1989 without state fiscal spending.

Collective Action Problem and the Increasing Financial Cost of Infrastructural Development

The state's lack of capacity to suppress the destructive competition between the communities located at the upstream and downstream of the rivers was among the major factors behind China's hydraulic decline from the 19th century until 1949 (see Appendix A). By successfully reducing these conflicts, rural collectives and village administrations

made an important contribution to the solution of the country's hydraulic problem between 1950 and 1990. In contrast, the Indian government failed to develop local institutions that could mitigate local conflicts. The report of the Irrigation and Power Team region on the Nagarjuna Sagar Dam in Andhra Pradesh (constructed between 1955 and 1967) pointed out to this problem succinctly:

The problem is partly engineering one...more fundamentally, however, the problem is political, for the government is unable to prevent farmers at the upper or head ends ... from taking so much water that the tail ends run dry...Little has been published on the subject, perhaps because India has put so much money, professional pride, and dreams of prosperity invested in the projects. Yet, many irrigation engineers in India will admit privately that the waste of development funds is staggering (GOI, Committee on Plan Projects, Minor Irrigation Team, [1960] 2009, cited in Shah, 2011, p. 80).

Twelve years after the publication of Wallach's report, the Ministry of Irrigation and Power openly admitted that the problem remained unsolved in Andhra Pradesh:

Some holdings in the tail-end areas of the canals get water only towards the end of July, because of the heavy demand and unauthorized cuts and breaches in the canal in the upper reaches. This inordinate delay in getting water affects the farmers in the tail end areas in two ways. Firstly, late transplantation, particularly in traditional varieties, reduces yields, and, secondly, because of late transplantation, the heavy rain in August finds the crop at a stage of growth when it is unable to stand submersion for long periods without serious damage (GOI, Ministry of Irrigation and Power, 1972b, p. 24).

A decade later, Robert Wade's field research confirmed the continuation of the problem. Wade demonstrated that during the implementation of the Command Area Program of the late 1970s and early 1980s, the Andhra Pradesh government attempted to solve this problem but generally failed to do so due to the resistance of the upstream communities through litigation, bribing and sometimes threatening of the officials (Wade, 1984, 1988). Hence,

Villagers towards the tail-end of an irrigation distributary tend to have a less adequate, more unreliable water supply than villages higher up...But the Irrigation Department, both in this village and in the rest of the state, is unable to do much rationing of the supply; it simply lacks the authority and its staff lack the inclination to do so...The workable authority of government in the countryside is generally weak, so in this respect the Irrigation Department is not peculiar (Wade, 1988, p. 163).

Some of the downstream villages that had water problems (due to the non-cooperation of the upstream villages) had maintained cooperative practices such as employing common irrigators *at least* since the 19th century in order to utilize the available scarce water as efficiently as possible. They had maintained local funds (obtained through renting out grazing land to herders, auctioning off the cattle dung, liquor franchise, and fishing rights to outsiders) to pay the people to provide irrigation services. Due to their relatively higher degree of local cooperation, Wade called these communities as “village republics.” However, he also recognized that this local cooperation had brought a palliative solution to these water scarce communities rather than bringing fundamental solution to the entire region due to several reasons. First, similar to the contradictions between the upstream and downstream communities, downstream communities had lacked cooperation among themselves. In the absence of a strong state-directed institution, the unit of cooperation did not extend beyond individual villages. Second, private landownership (i.e., the government’s weak control over land) obstructed cooperation in several occasions. For instance, Wade notes that one of the reasons of differential degrees of cooperation among the downstream communities he investigated was that “in one of them the land near the channel is owned by one dominant lineage, which is reluctant to allow field channels to be built across the land on its members to irrigate zoned land further away.”⁷⁹ Third, even the so-called “village republics” were unable to raise revenue from the villagers and totally relied on the above-mentioned rental income sources, which limited the size of the local

⁷⁹ Indian government had much less difficulty in land acquisitions for development projects during the Nehru era than the current neoliberal era due to the greater popular legitimacy of the Nehruvian developmentalist project (Levien, 2012, p. 945; Levien, 2013, p. 361). Nevertheless, government control over land had always been greater in China than in India between 1950 and 1990 due to the eradication of private landownership and significant expansion of the eminent domain in the former following rural collectivization. In addition to the Andhra Pradesh case mentioned above, I will also present another case from Kerala later, which confirms that private landownership put greater obstacles to the progress of the infrastructure projects in rural India.

revenues and the areas they could be used in. Finally, mobilization of local labor was absent in “villages republics” as well as all other villages: “even such a routine and decentralized activity as field channel maintenance tends to be done not by a cooperative workgroup of affected farmers, but by a contractor hiring labourers, and the same is true for all the labour-requiring tasks which the councils undertake” (Wade, 1988, pp. 165, 211-212).

The situation was similar in Tamil Nadu, where surface irrigation by tanks was historically more developed than other parts of the country. Tanks can be easily silted up in the absence of regular maintenance. The region had a centuries-long tradition of labor and financial mobilization for tank maintenance. Landlords regularly mobilized the villagers in maintenance activities. The people who could not contribute labor had to pay fees. The continuity of this tradition made Tamil Nadu one of the best-irrigated regions of the country. Although the signs of hydraulic decline appeared during the 150 years preceding the Indian independence, the decline was not rapid until the early 1970s. The transition of the agrarian structure from the domination of high caste landlords to low-caste small peasants triggered the decline of landlord leadership in hydraulic works. The growing individualism and the physical ease of tapping groundwater by tubewells also decreased the peasants’ interest in tank irrigation. While the Public Works Department had occasionally carried out renovation and maintenance works, in the absence of collective mobilization of labor and financial resources, tank irrigation declined in Tamil Nadu significantly since the 1970s (Janakarajan, 2004).

As in the launching of the CDP in 1952, this significant problem of local cooperation in hydraulic works had motivated the central and local governments to devise various schemes to establish villager-run irrigation organizations. From the early 1960s

onwards, irrigation committees (*sinchai samitis*) were established in Uttar Pradesh and Madhya Pradesh to let the villagers take care of the reservoirs and tanks. Gujarat and many other states tried water councils (*pani panchayats*) to achieve the same goal. Gujarat also introduced the Joint Irrigation Management Program in 1983. However, most of these attempts failed to mobilize labor and financial resources of the rural population. These organizations were either abolished formally or left to a slow extinction few years after their start (Shah, 2011, p. 77).

The hydraulic problem was worse in east India at the time of independence (see Appendix B). This region required greater mobilization efforts to develop irrigation and prevent flooding. However, this had not happened during the post-1950 era due to lack of radical transformation of the regional agrarian structure. For instance, land reforms implemented by the Communist Party of India-Marxist (CPI-M) in West Bengal after 1977 improved the position of the tenants but did not reduce landlessness significantly. By the early 1990s, 13% of the households owned 44% of the land and about half of the households were still landless (Mallick, 1993, pp. 165-167). Since they did not have any chance to reap the benefits of the infrastructural developments, landless peasants remained unwilling to contribute to the infrastructure projects with unpaid labor. On the other hand, although the landed peasantry appeared as the potential beneficiary of the created assets, they did not support rural labor mobilization involving the landless peasants because of its potential to increase the self-confidence of this group and thereby challenge the agrarian status quo. Finally, landowners had engaged in destructive competition more often than productive cooperation in hydraulic works:

The lack of institutional mechanisms for co-operative water use finds its most striking expression in the sabotage of valuable irrigation equipment by those excluded from its benefits, for whom the waterlord's enhanced wealth and power is not only a cause of envy,

but also a potential threat. In the short run, the injection of additional resources – such as a tubewell- into a village might appear merely to expand the economic pie; some will benefit more than others, but no one will lose. In the longer run, however, the increased prosperity of those who control the additional resources will translate into increased power. And the balance of power – which determines, among other things, the outcomes of contests over land- has a substantial zero-sum element: if the waterlord becomes more powerful, others in the village become less so. In such a context, sabotage need not be ascribed simply to envy, for it may be a calculated and quite rational response, grounded once again in individual self-interest (Boyce, 1987, p. 253).

Pouring money into rural hydraulic projects without a radical transformation of this agrarian structure caused massive waste of resources with a mediocre level of hydraulic development:

Attempts to resolve this impasse through government-initiated rural works projects founder upon the same vested interests: the appropriation of external resources for immediate gain subverts the mobilization of internal resources for productive investment. When irrigation resources are provided directly by the government, they are systematically underutilized. Larger landowners, or those situated closer to the head of the system, appropriate disproportionate shares of canal water for the cultivation of water-intensive crops, maximizing output and profit on their own lands but reducing the efficiency of irrigation in the economy as a whole. Small-scale irrigation units, such as tubewells, are frequently sited so as to maximize returns to powerful individuals, rather than total returns. These ‘waterlords’ again favor individual over group interests in water allocation, practice monopoly pricing, and withhold water as a tactic in contests over control of land (Boyce, 1987, p. 253).

In Bihar, which shares a similar agrarian structure, since the attempts through the panchayats to encourage cultivators to construct channels have failed, the utilization of water both in the Kosi and in the Gandak canal systems dropped in 1969-70 compared with the previous years (GOI, Ministry of Irrigation and Power, 1972b, p. 65). As we will see below, the government also failed to mobilize the peasantry in capital construction works in Kerala, even though land distribution was much more egalitarian. Overall, the Irrigation Commission’s 1972 report recognized that in India as a whole, “the experience of entrusting certain functions of irrigation administration to the Panchayati Raj institutions and irrigators’ cooperatives has not so far been satisfactory” (GOI, Ministry of Irrigation and Power, 1972a, p. 374).

Despite these widespread problems, a few successful cases of local irrigation management were launched. These depended for a long time on generous outside financial and technical support. For instance, the Aga Khan Rural Support Program and Development Support Center employed 30 professional staff for more than ten years to organize irrigation associations having less than 30,000 members. In the well-known case of successful irrigation management in Ozar town in Nashik district of Maharashtra, in a similarly limited area the staff of an NGO and a local research center worked intensively to organize the irrigation cooperatives (Shah, 2011, pp. 77-78).

This experience stood in stark contrast to rural collectives and village administrations in China, which were able to mobilize massive amounts of unpaid rural labor to construct and maintain infrastructure (including irrigation and electricity facilities) due to their strong control over land and labor. Despite the Indian government's intentions to organize a similar type of labor mobilization, it failed due to its relatively lower degree of penetration into the countryside and weaker control over land and labor. Due to the absence of effective labor mobilization, infrastructure projects were carried out by private contractors employing wage labor. As Sen and Rudra note, the widespread employment of wage labor in infrastructural projects in rural India and its absence in rural China was one of the key differences between their development trajectories in the post-1950 era (Sen & Rudra, 1980, p. 391, 394). The involvement of private contractors was estimated to increase the cost of irrigation projects by *at least* 25% in India in this period. This extra cost was paid out of the government budget. Part of this increased cost was due to institutionalized corruption in which part of the proceeds were split between the contractors and the government officials (Wade, 1982, pp. 292-295; Wade, 1984, pp. 295-296). Hence,

developing rural infrastructure became much more costly in India than in China. This invites us to take a closer look at India's rural development finance, to which we will turn below.

The Weakness of Financial Mobilization in the Countryside

According to the urban bias thesis, which has been one of the most popular arguments in development literature, rural underdevelopment in the Third World has been the result of the state's bias towards the urban economy and neglect of investing in the rural economy (Bates, 1981; Brass, 1990, pp. 275-335; Lipton, 1973; World Bank, 1982, 1986, 1988). India has been one of most frequently studied cases in this literature. Michael Lipton (who coined the term "urban bias") based his argument on the Indian case (Lipton, 1973). On the other hand, as Ashutosh Varshney points out, Charan Singh had made essentially the same argument starting in the late 1950s (Varshney, 1998, p. 103). Many of the Indian scholars that I contacted during my research in India in 2013 expressed different versions of this opinion.

Although the advocates of the urban bias thesis have not problematized and written much about the divergence of the rural economies of China and India between 1950 and 1990, the popularity of this approach invites us to search whether or not China's rural economy developed more rapidly than India's because of the latter's greater urban bias than the former. To do this, it is necessary to analyze the degree of urban bias in India compared to China. I will start with an analysis of the political factors that weighed against the entrenchment of an urban bias in India. I will show that Indian development policy had greater *rural bias* than that of China. After that, I will examine the weakness of local self-finance, agricultural taxation, and resource flows from agriculture to industry.

The power of the landed peasantry and rural bias

Since the Indian state did not acquire the capacity to use surplus labor, the development of the rural economy came to depend mostly on fiscal spending. Agriculture and allied activities (the primary sector) had been the largest sector of the national income until 1980 (Table 33). The magnitude of fiscal spending therefore depended significantly on the financial contribution of agriculture. During and after the 1950s, the leaders and planners aimed to increase agriculture's contribution to economic development by establishing local funds to finance a part of the cost of local projects and taxing agricultural income directly and indirectly.

Table 33. The Composition of India's GDP, 1950/51-1990/91

	Primary	Secondary	Tertiary
1950-51	53.8	15.9	30.3
1960-61	49.8	19.7	30.5
1970-71	43.4	23.2	33.3
1980-81	37.5	25.3	37.2
1990-91	30.9	29.6	39.5

Source. Sivasubramonian, 2000, pp. 639-644.

The state's failure to control the countryside through establishing strong local institutions prevented the taxation of agriculture. Moreover, from the mid-1960s onwards, rural elites had established an increasingly powerful farmers' movement that blocked all attempts towards this direction. Although rural elites formed its leadership, the movement was sufficiently broad. It aimed and to a significant extent succeeded to unite 80% of the agricultural population, who were landed cultivators (small, middle, and rich peasantry as well as rentier landlords), while excluding the low-caste landless workers, comprising the remaining 20%. The alliance strongly opposed the implementation of minimum wage laws in agriculture. In places like Punjab where prevailing wages were already above the minimum wage, the landed peasantry fought to keep wage increases to a minimum. The

goal of the alliance was to force the state to increase agricultural spending, crop procurement prices, and farm subsidies (including fertilizer, pesticide, and electricity used in farm activities). The waiver of farmers' unpaid loans to banks was also demanded periodically. The farmers' movement also resisted the taxation of agricultural incomes. The parties and organizations that had effectively opposed cooperative farming in the late 1950s and early 1960s (such as Charan Singh's BKD/BLD, Swatantra Party, and Jan Sangh) were part of this movement. Starting with agitation in the most advanced agricultural regions such as Ludhiana in Punjab and Coimbatore in Tamil Nadu, the farmers' movement spread all over India in the 1970s. It played a critical role in toppling the INC and bringing the Janata coalition to power in 1977. Charan Singh, one of the leading spokesmen of the movement, served as the prime minister between 1977 and 1979.⁸⁰

On the other hand, not only the Janata coalition but also all major political parties were compelled to accept these demands. As Varshney points out, the movement successfully created an atmosphere of "competitive agrarianism" which shaped the Indian politics in the 1970s and 1980s (Varshney, 1998, p. 158). In this atmosphere, the terms of the political competition were defined as which party promised the highest prices, subsidies, and financial support to cultivators. For instance, after Indira Gandhi's landslide victory in the general elections of 1971, Nehruvian economic planners regained their confidence for pushing their rural mobilization agenda. They insisted on establishing state monopoly on the grain trade and taxing agricultural income effectively. However, none of these policies were put into practice by the Gandhi administration due to its fear of losing

⁸⁰ My analysis of the political dynamics behind the failure of financial mobilization in the Indian countryside derives from the following sources: Mitra, 1977; Frankel, 2005; Raj, 1973a; Raj, 1973b; Varshney, 1998.

farmers' votes. In fact, the INC accepted the terms of competitive agrarianism and met most of the demands of the farmers' movement during the 1970s and 1980s.

Another interesting case in this regard is the trajectory of the West Bengal government controlled by the CPI-M after 1977. Ashok Mitra was one of the chief spokesmen of the party and the Finance Minister of West Bengal between 1977 and 1986. Mitra was also one of the prominent Indian political economists who had continuously stressed the absence of resource transfers from agriculture to industry as one of the chief causes of the country's slow industrial growth and called for greater agricultural taxation and more modest increases in crop procurement prices. However, the West Bengal government never took this road. In an interview in 1984, Mitra candidly remarked that although his ideas did not change, "in our kind of polity, populism can affect all parties. If you are in the market for votes, even the leftist parties will not go against the rich peasantry" (Varshney, 1998, p. 139). Overall, as Varshney puts it, "the notion that the state could be used to tame the dominant class in the countryside was set to rest" and in the end, "the Indian state was tamed, not the peasantry" (Varshney, 1998, p. 93, 100).

High government spending for the rural economy

The data on government expenditure for the rural economy is one of the main indicators of India's greater rural bias compared to China. Agriculture's share in total government expenditure was 10.04% in China between 1951 and 1990 (Author's calculation based on State Statistical Bureau, 1993, p. 193). This figure reflects the spending for all agriculture-related items including irrigation and flood control. As Table 34 demonstrates, the same figure was consistently above 20% between 1951 and 1990. Moreover, as we will see below, a large portion of the significant expenditure for power

infrastructure was allocated to the countryside in the form of highly subsidized electricity after the mid-1960s. Village and small industries received slightly over 2% of central government spending in the same period. There was not a comparable degree of resource allocation from the central budget to rural industries in China in that period.

Table 34. Composition of Government Expenditure in India's Five-Year Plans, 1951-1990 (%)

	1 st	2 nd	3 rd	Annual	4 th	5 th	6 th	7 th
Agriculture & Allied Activities	14.8	11.7	12.7	16.7	14.7	12.3	12.8	12.6
Irrigation & Flood Control	22.2	9.2	7.8	7.1	8.6	9.5	12.5	9.4
Total agriculture	37.0	20.9	20.5	23.8	23.3	21.8	25.3	22.0
Power	7.6	9.7	14.6	18.3	18.6	18.8	19.8	19.1
Village & Small Industries	2.0	4.0	2.8	1.9	1.5	1.3	1.8	1.5
Industry & Minerals	2.8	20.0	20.1	22.8	18.2	24.1	21.0	22.4
Transport & Communications	26.5	22.0	24.6	18.5	19.5	17.8	15.9	16.4
Other expenditure	24.0	23.4	17.4	14.7	19.0	16.6	16.2	18.6
Total expenditure	19.6	46.7	85.8	66.3	158.8	286.5	975	1800

(Billion Rs)

Source. Brass, 1990, p. 74.

Note. The five year plan (FYP) periods are as follows: the First FYP (1951-56), Second FYP (1956-61), Third FYP (1961-66), Annual Plans (1966-69), Fourth FYP (1969-74), Fifth FYP (1974-79), Sixth FYP (1980-85), and Seventh FYP (1985-90).

Hence, in order to understand rural India's consistently lower economic performance compared to rural China despite allocating greater part of its budgetary sources to the rural economy, we need to look at the factors that limited the size of its budget and also forced state development plans to depend heavily on this limited source.

Weak local self-finance

The above-mentioned political circumstances ruled out the possibility of covering part of the costs of the construction and maintenance of rural infrastructure with local self-finance. In a speech in the Lok Sabha in 1974, D.P. Dhar, Planning Minister in Indira

Gandhi government and one of the last politicians who openly defended the transfer of agricultural surplus to industry, stated:

The investment made in the agriculture sector through rural electrification programs, for energizing of wells and other lift irrigation systems are almost running at a loss...Irrigation rates in most parts of the country are so fantastically low that even today we are paying a sum of about [1.7 billion Rs] a year as a loss only on the maintenance of irrigation systems (Varshney, 1998, p. 99).

Dhar's statement does not exaggerate the situation. The trajectory of canal irrigation finance reflects this fact well. The ratio of collected water fees to capital investment in canal irrigation decreased from 10% in 1902-3 to 1.43% in 1977-78 and 0.3% in 1986-87. The ratio of water fees to working expenses of canal irrigation decreased from 280% in 1902-03 to 45% in 1977-78 and 20% in 1986-87. Given the fact that the ratio of water fees to the value of crops irrigated by canal water dropped from 11% in 1902-3 to 2% in 1986-87, it appears clearly that the peasantry successfully transferred the burden of irrigation finance to the state in the post-1950 period (Shah, 2011, p. 71). In *The Report of the Irrigation Commission* published in 1972, the absence of local self-finance was recognized as a primary obstacle to hydraulic development especially in states having less fiscal power. For instance, the report stated that in Bihar, "the irrigation rates are very low and need to be revised upwards. Unless reasonable irrigation rates are levied, it will not be possible for the State to muster adequate resources for its development plans" (GOI, Ministry of Irrigation and Power, 1972b, p. 71).

While the potential benefits of the conjunctive use of surface and groundwater to agricultural production had been widely recognized in the country (GOI, Ministry of Irrigation and Power, 1972a, p. 313; Shah, 2011, p. 69), the deterioration of canal and tank irrigation led to greater reliance on groundwater sources tapped through electric-powered tubewells. The share of canal irrigated area within all irrigated area declined from 42.3%

in 1947 to 34.27% in 1990-91. Tanks' share declined from 17% to 6.46% in the same period while the share of wells and tubewells increased from 27.3% to 52% (Ministry of Irrigation and Power, 1972a, p. 69; Author's calculation based on Ministry of Government of India, Department of Agriculture and Cooperation, 2004, p. 191). Farmers can dig tubewells on their own land to irrigate their crops. Hence, groundwater irrigation is a much more individualized method compared to canal irrigation that requires cooperation and coordination among the cultivators. The rise of groundwater irrigation in India therefore suggests a decrease in the state's financial role and an increase in that of individual households.

However, as Dhar's above statement shows, the competitive agrarianism of the Indian politics produced an opposite outcome. In 1968, the Punjab government shifted from metering agricultural consumption to a flat-rate tariff that was based on the size (in horsepower) of tubewells. This policy provided a significant advantage to large farmers using larger tubewells. The state government also kept the electricity rates at a very low level. The Maharashtra government also shifted to non-metered rates in 1977-78. At the same time, it reduced the rate of non-metered consumption from Rs 180 to Rs 125 and metered rural consumption from 29 paise to 20 paise per unit. The Gujarat government followed a similar subsidy policy from the 1960s on. Finally, although rural electricity rates were initially lower in Tamil Nadu than other parts of the country, from the late 1960s on, intense competition between the two regional parties (Dravida Munnetra Kazhagam [Dravidian Progress Federation, DMK] and All India Anna Dravida Munnetra Kazhagam [All India Anna Dravidian Progress Federation, AIDMK]) in state elections gradually reduced electricity rates to zero. With a few exceptions, the state governments began

subsidizing rural electricity significantly in the mid-1960s. The soaring costs were transferred to urban and industrial consumers (Kale, 2014, pp. 81-91, 114, 161-170). As we will see in the next section, financing high electricity subsidies with a narrow urban tax base put significant constraints on rural electrification.

In sum, in contrast to rural China where local self-finance played a crucial role in the development of rural infrastructure, it did not play a significant role in India. This increased the dependency of rural development on government spending.

Untaxed agriculture

Agricultural taxation started to decrease in British India in the 1860s due to rural elites' political pressure. After 1900, the ratio of tax to total agricultural income did not exceed 5%. It dropped to 2% in 1947 (see Appendix B). In the 1950s, the Indian leaders and planners expected that the elimination of the zamindari tax farmers would increase the amount of tax revenue obtained from this sector. Despite the limited success of the land reforms in terms of land distribution, the Indian state was able to abolish the zamindari system in the 1950s. Contrary to expectations, however, this did not increase tax revenues in regions like Bihar where the zamindari system was strong before (Jha, 1987, pp. v-vi, 56). Agricultural taxation remained extremely low throughout the post-independence era. In 1972, the Committee on Taxation of Agricultural Wealth and Income (chaired by the eminent development economist, K. N. Raj) reported that the ratio of tax to total agricultural income was only 1.63% in 1960-61, 0.91% in 1965-66, and 0.85% in 1970-71 (GOI, Ministry of Finance, 1972, p. 8). This provided a stark contrast to the situation in China, where the rural collectives transferred 5.36% of their net income to the state in the form of taxes between 1952 and 1982.

The committee also found that the nonagricultural sector was taxed more than the agricultural sector. The ratio of tax to non-agricultural income was 2.49% in 1960-61, 2.41% in 1965-66, and 2.60% in 1970-71 (GOI, Ministry of Finance, 1972, p. 8). Table 35 confirms this finding (on a per capita basis) for the decade between 1950-51 and 1961-62. Hence, although non-agricultural income was taxed very lightly, its tax burden was significantly heavier than agricultural income.

Table 35. Tax as % of the Per Capita Agricultural and Nonagricultural Income, 1950/51-1961/62

	Agricultural	Nonagricultural
1950-51	3.63%	8.81%
1955-56	5.37%	8.85%
1960-61	5.61%	13.02%
1961-62	5.90%	13.21%

Source. Gandhi, 1966, p. 56.

As a result, the share of the agricultural tax in total revenue dropped from about 7% in the early 1960s to less than 1% in the early 1990s (Varshney, 1998, p. 178). In stark contrast to India, Chapter 2 has demonstrated that agricultural tax comprised 28.77% of the total tax revenue in China between 1952 and 1982. Also, China's tax to GDP ratio, which was about 5% in the Republican period, climbed to 15.57% between 1952 and 1982. India's tax to GDP ratio was 9.8% in the same period, and 10.9% between 1951 and 1990 (author's calculation based on Government of India, Ministry of Finance, 2013, p. 14).

As Chapter 1 demonstrated, while China was a net capital exporter between 1960 and 1990, foreign aid provided by the countries like the US and the USSR and international agencies like the World Bank comprised about 3% of India's net national product, 12% of gross domestic capital formation, and 28% of the central government's capital expenditures in India between 1960 and 1980 (author's calculation based on Sukhatme, 1989, p. 206). Despite this significant advantage of India, a significant gap between the fiscal capacities

of the two states opened up in favor of China primarily due to the two countries' diverging performance of agricultural taxation. Finally, despite the continuous increase in China's fiscal capacity, its rural economy did not depend much on government spending due to the widespread character of labor mobilization and self-finance in the countryside. On the contrary, although India's fiscal capacity did not improve in any comparable extent, its rural economy relied increasingly on government expenditure.

Inter-sectoral resource flows

Our discussion has so far demonstrated that although agriculture had been the largest sector of the Indian economy, it did not make any significant tax contribution to the government coffers although it received a large share of the government's development spending. We can now take a closer look at the resource flows between agriculture and industry to see whether the former made any significant financial contribution to the latter via the price scissors. We have seen that one of the key lessons taken by the Nehru administration from the development experiences of Japan, Soviet Union, and China was that for an underdeveloped agrarian economy like India a consistent transfer of the agricultural surplus to industry was a precondition of rapid and sustained industrialization. Hence, while Indian planners emphasized the importance of increasing the agricultural surplus through developing the agricultural infrastructure and extending the use of modern inputs and technology, they also underscored the need to keep agricultural prices lower than the industrial prices in order to promote industrial development. As in China and the Soviet Union, a government monopoly over grain trade was seen as the key mechanism to achieve this goal.

The power of the rural elites and the growing influence of the broad alliance of the landed peasantry prevented the attempts in this direction in the 1950s and after. Unable to establish strong state-directed rural organizations, the government agencies depended on private traders and were never able to establish effective market monopoly. Also, the farmers' demand for higher procurement prices successfully shaped the pricing policy of the government. As Table 36 demonstrates, with few exceptions state governments fixed the procurement prices of rice and wheat higher than the ones recommended by the Agricultural Prices Commission between 1966 and 1977.

Table 36. Average Excess of the Rice and Wheat Procurement Prices Fixed by State Governments over the Price Recommended by the Agricultural Prices Commission, 1966-1977

Year	Average excess (Wheat)	Average excess (Rice)
1966-67	1%	16%
1967-68	34%	21%
1968-69	7%	4%
1969-70	9%	1%
1970-71	6%	0%
1971-72	3%	2%
1972-73	6%	2%
1974-75	0%	-2%
1975-76	1%	0%
1976-77	6%	NA

Source. Krishna & Raychaudhuri, 1980a, pp. 3-4.

Note. The data is based on the wheat procurement prices in Bihar, Gujarat, Haryana, Madhya Pradesh, Punjab, Rajasthan, and Uttar Pradesh and rice procurement prices in Andhra Pradesh, Assam, Bihar, Haryana, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Tamil Nadu, Uttar Pradesh, and West Bengal.

The comparative movement of agricultural and industrial prices has been constantly debated within the Indian academic and policy circles in order to determine the existing degree of agricultural (or industrial) bias. R. Thamarajakshi's 1969 study (one of the earliest works in inter-sectoral terms of trade in post-1950 India) found that agriculture's terms of trade improved vis-à-vis industry between 1951 and 1966. In his famous book

titled *Terms of Trade and Class Relations*, published in 1977, Ashok Mitra found that “compared to 1964-65, the index number of agricultural prices had more than doubled by 1973-74 while industrial prices advanced on the average by 70 per cent” (Mitra, 1977, p. 146). In 1979, D. S. Tyagi published a methodological critique of both works, which suggested that “the relative price position of agricultural and industrial products have been changing from year to year, in some years the prices of agricultural commodities increased at a faster rate while in other years it lagged far behind the rise in prices of industrial products. On the whole, however, both appear to have moved upward at the same pace” (Tyagi, 1979, p. a-117).

What appears clearly from this debate is the fact that there was not any consistent industrial bias in the price structure in the country between 1951 and 1974. In his powerful empirical and methodological critique of Tyagi’s work, Nalini Vittal stressed this point: “Tyagi himself can find no evidence of consistent anti-agriculture bias. What he is trying to refute is the notion of pro-agriculture bias put forward by Mitra” (Vittal, 1986, p. a-149). The same can be said for Varshney’s 1998 study. Based on the data on comparative prices of agricultural and industrial manufactured products between 1971 and 1989, Varshney writes: “No trend in either direction is visible for the entire period: it is a random walk. Upward and downward trajectories are essentially short-run. Other exercises carried out for a longer period show similar results: absence of a long-run trend but upward or downward trends for short periods of time” (Varshney, 1998, p. 151).

In sum, due to the politically influential interests of the landed peasantry in general and rural elite in particular, although agriculture had been the largest sector of the Indian economy until 1980, it remained largely untaxed (either directly or indirectly) but received

a large portion of the state's development spending between 1950 and 1990. However, since the government's fiscal power remained to be very limited due to the same factors, the allocation of a large part of government spending to agriculture was not sufficient to solve the huge infrastructural bottlenecks of the rural economy. We can now turn to the analysis of this outcome.

Relatively Slow Development of Physical Infrastructure

In this section, we will take a closer look at two crucial infrastructure items: irrigation and electricity. Irrigation has always been a key input to increase land and labor productivity. A strong irrigation infrastructure enables the effective use of modern inputs such as high-yielding seed varieties, chemical fertilizers, and pesticides that underlined India's Green Revolution since the mid-1960s. In the previous chapter, we have seen that the geographical scope of irrigation development in British India was confined to a few provinces such as Punjab and Madras while the rest of the country (especially the eastern regions comprising a large part of the rural population and cultivated area) did not witness any serious development in this regard.

As Table 37 demonstrates, in 1980 India had only two states – Punjab and Haryana – that were above and two states – Tamil Nadu and Uttar Pradesh – that were close to China's average level of irrigation. Punjab and Haryana belonged to the British Punjab. Tamil Nadu comprised the largest part of Madras. Uttar Pradesh comprised the largest part of the United Provinces of the British India, where irrigation progressed significantly in the colonial era (see Appendix B). The rest of India was far behind the Chinese average in 1982. Uttar Pradesh joined Haryana and Punjab as the third Indian state exceeding the Chinese average by 1990. Tamil Nadu's ratio decreased slightly and remained close to the Chinese average.

In the early 1990s, these four states comprised only about 28% of the rural population and 22% of the net sown area in India (Author's calculation based on GOI, Ministry of Finance, 2000, p. s-114; Majumdar, 2013, p. 46). As in the colonial period, this geographically narrow character of irrigation development kept the aggregate/national level low. As Table 37 demonstrates, the proportion of the country's farmland that was irrigated was 17.65% in 1951-52, 27.65% in 1980-81 and 33.41% in 1990-91. We shall also remember that the ratio of irrigated area rose from 17.9% in 1952 to 49.4% in 1982 in China. In the 1980s, Chinese government deliberately chose to consolidate rather than expand the irrigated acreage. By 1990, the ratio of irrigated area was 50.6%. In other words, although India's ratio of irrigated area was equal to China's ratio in 1952, it was 21.85% and 17.2% less than China's ratio in 1980 and 1990, respectively. It is also important to note that the two countries' irrigation gap was not caused by natural factors. By 2000, India was using 67% of its total irrigation potential and was capable of reaching China's level of irrigated acreage (50%) with the full utilization of this potential (Dehadrai, 2004; Narayanamoorthy, 2005, p. 15). This was among the most direct and important consequences of the two countries' gap in terms of rural labor and financial mobilization.

Table 37. Net Irrigated Area as % of Net Sown Area in the States of India, 1970-1990

	Andhra Pradesh	Assam	Bihar	Gujarat	Haryana	Himachal Pradesh
1970	30.37	8.67	27.52	13.72	39.69	15.25
1975	32.00	10.11	29.94	15.99	50.47	17.30
1980	34.36	11.58	35.30	20.79	60.10	17.33
1985	37.55	12.07	37.75	23.30	63.58	17.41
1990	40.01	12.83	40.12	26.15	69.72	18.05
	Jammu & Kashmir	Karnataka	Kerala	Madhya Pradesh	Maharashtra	
1970	36.31	12.43	21.08	8.47	8.45	
1975	40.01	13.93	18.82	9.40	9.82	
1980	40.63	15.90	13.88	10.76	11.88	
1985	40.60	18.92	15.05	11.63	11.63	
1990	39.55	22.78	12.69	16.92	14.01	

	Orissa	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh	West Bengal
1970	16.58	74.47	14.68	45.56	38.06	20.34
1975	18.23	76.43	15.38	47.91	40.79	23.10
1980	19.89	86.46	23.73	46.02	43.94	25.54
1985	25.14	99.58	22.11	42.57	49.27	27.50
1990	30.26	91.24	23.43	45.19	55.33	29.02

Source. Fan et al., 1999, pp. 54-55.

Table 38. Net Sown and Net Irrigated Area in India, 1950/51-1990/91

	Net sown area (Million ha)	Net irrigated area (Million ha)	Net irrigated area as % of net sown area
1951-52	119.40	21.08	17.65
1960-61	133.20	24.66	18.51
1970-71	140.27	31.10	22.17
1980-81	140.00	38.72	27.65
1990-91	143.00	47.78	33.41

Source. Government of India, Department of Agriculture and Cooperation, 2004, p. 163.

Note. Percentage figures are author's calculations based on the table.

A similar picture appears in the area of rural electrification. Rural electrification enables the effective use of agricultural and industrial machinery and therefore appears as a precondition of rapid and sustained development of the rural economy. As Table 39 demonstrates, the consumption of electricity in agriculture increased at a much rapid rate in China than India before 1980 and a substantial gap was still present by 1990. In short, while rural China increased its access to electricity rapidly based on the combination of government spending and significant labor and capital investment by the collectives and villages (Chapters 2 and 3), rural India increased its electricity access at a slower rate by relying entirely on spending by central and state governments having very narrow urban tax bases.

Table 39. Consumption of Electric Power in Agriculture (Kilowatt hours per hectare) in China and India, 1952-1990

Year	China	India
1952	0.45	NA
1970	94.50	38.20
1980	322.60	130.20
1990	882.50	454.90

Source. Chai & Roy, 2006, p. 76.

The Slow Development of Human Capital

We have already examined the importance of human capital for rural economic development in the previous chapters. Three main factors produced a very different trajectory of human capital development in rural India. First, as with other infrastructure items, rural areas depended almost entirely on government spending to develop healthcare and education services. Second, while rural elites and farmers' organizations they led continuously demanded irrigation and electricity subsidies and crop price increases, they did not raise a comparably strong demand for human capital infrastructure such as schools and clinics. Third, since the central and state governments were fiscally strained due to their efforts to meet existing demands, they had neither the financial means nor sufficient motivation to invest much in human capital. A serious strategy to develop human capital in the countryside would require spending cuts from other items or large contributions from the rural population. Moreover, the development of human capital would bring returns in the long run rather than the short run returns brought by subsidies and price increases. Hence, pushing towards this direction was not demanded by the rural elites and ordinary peasants and seemed unnecessary to the politicians.

This led to a slow development of education and healthcare in India compared to China. Chapter 2 has demonstrated that educational expenditure constituted only 6.5% of total government spending in China between 1950 and 1978. By 1978, China's educational spending was significantly below the median of 82 other developing countries surveyed by the World Bank including India. Educational expenditure constituted 10.16% of total government spending in India between 1951 and 1978. Similarly, the ratio of healthcare expenditure to GDP was 1.53% in China between 1950 and 1980, which was not dramatically higher than Indian figures of 0.22% in 1950, 0.49% in 1955, 0.63% in 1960, 0.61% in 1965, 0.74% in 1970, 0.81% in 1975, and 0.91% in 1980 (Author's calculation based on the Indiastat Database, 2014). On the other hand, since the rural collectives self-financed the construction and maintenance costs of the schools and clinics, absorbed the largely non-salaried urban cadres and youth entering the villages for carrying out health and education campaigns, and raised local teachers and medical personnel from within the village youth, rural health and education developed rapidly in China. Literacy rate in rural China reached 65.26% in 1982. As Table 40 demonstrates, rural Kerala's literacy rate was similar to rural China's at that point. However, in both 1980 and 1990, all other Indian states remained far behind the Chinese average. Healthcare institutions and basic healthcare services also expanded more slowly. Also, we have seen in Chapter 2 that healthcare campaigns increased the number of latrines dramatically and reduced open defecation to a very low level in rural China. In contrast, open defecation has remained universal in rural India even today (Coffey et al., 2014, p. 43). These factors created a significant gap between rural health levels of two countries. China's average life

expectancy was about 67 years by 1980. As Table 41 demonstrates, in 1988-92 all Indian states except Kerala were far behind the Chinese average.

Table 40. Literacy Rate in Rural India, 1970-1990

Year	Andhra Pradesh	Assam	Bihar	Gujarat	Haryana	Himachal Pradesh
1970	19.31	27.15	16.75	27.65	24.67	32.99
1975	21.45	33.38	18.40	31.21	26.33	35.85
1980	24.03	41.46	20.14	35.20	28.47	38.69
1985	25.87	44.48	22.17	39.25	29.27	43.85
1990	28.82	45.79	24.64	43.92	31.17	50.04

Year	Jammu & Kashmir	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Orissa
1970	14.03	23.08	55.07	17.26	29.87	24.61
1975	16.28	25.62	59.94	18.67	35.17	27.30
1980	19.11	28.67	65.72	20.47	41.96	30.44
1985	21.90	31.53	70.59	23.64	42.68	32.77
1990	25.65	34.04	75.44	27.36	41.34	35.05

Year	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh	West Bengal	All-India
1970	26.70	13.07	32.56	16.36	27.92	23.38
1975	30.31	15.10	35.15	17.03	28.28	25.68
1980	34.78	17.44	38.02	18.55	30.70	28.74
1985	38.20	20.07	40.99	21.71	34.84	30.92
1990	42.89	23.42	44.50	26.71	40.63	34.21

Source. Fan et al., 1999, pp. 58-59.

Table 41. Life Expectancy at Birth in Rural India, 1988-92

State	Life expectancy
Andhra Pradesh	59.4
Assam	53.5
Bihar	56.9
Gujarat	57.9
Haryana	61.8
Himachal Pradesh	63.1
Karnataka	60.7
Kerala	70.9
Madhya Pradesh	52.0
Maharashtra	61.6
Orissa	54.8
Punjab	65.4
Rajasthan	54.9
Tamil Nadu	60.0
Uttar Pradesh	54.4
West Bengal	59.8

The Performance of India's Rural Economy

In this section, I will briefly discuss the regional variation of agrarian and rural industrial development and its impact on the economic performance of rural India as a whole.

Agriculture

As examined before, the absence of nationwide rural mobilization made each region's agriculture highly dependent on the investment capacity of its local government and individual households. This inevitably reproduced the colonial pattern of regional variation in the post-independence period. Punjab was one of the best-irrigated areas of the world before 1947. The colonial administration also established farmer colonies around the canal-irrigated areas of Punjab where farmland per household was significantly larger than the rest of India. The extension of modern technology and inputs in the region was also more advanced than other regions. Hence, in terms of technology and use of modern techniques the region's farmers were significantly ahead of the rest of the country before 1947. Although its best-irrigated areas were in the areas that became Pakistan, the remaining areas that stayed within India's current borders (Punjab and Haryana states) inherited this very positive legacy. Tamil Nadu and western Uttar Pradesh also inherited a positive legacy (albeit much less pronounced than Punjab and Haryana). There were pockets of advanced agricultural regions in other states as well. For instance, milk production in Gujarat and sugarcane production in western Maharashtra made advances before independence due to the native control of the economy that enabled greater support to milk and sugar cooperatives (controlled by the wealthy farmers) in these regions (see

Appendix B). These were the regions where farmers had the capacity to make significant investment in infrastructure and technology. Their wealth and influence in the political arena was also significant. They successfully pushed the state governments to provide them significant financial, infrastructural, and technological support during the entire period but especially following the start of the Green Revolution in the mid-1960s. Hence, the combination of government and private investment led to continuous advancement in these areas.

Conditions in the rest of the country were radically different. The other regions inherited a very underdeveloped infrastructure and technology and they lacked a class of relatively knowledgeable and entrepreneurial farmers capable of investing in infrastructure and technology (see Appendix B). Although these areas received significant government investment (without paying taxes), the combination of initial low level and the lack of private investment constrained agrarian development in these regions. In fact, the country's ratio of net saving to rural income was only 2.80% between 1950 and 1974. The ratio of net agricultural investment to rural income was 2.98% in the same period. Besides confirming my argument above that the urban economy made a net contribution to capital formation in agriculture, an average investment rate of 2.98% reflects the private sector's general lack of investment capacity in India (Krishna & Raychaudhuri, 1980b, pp. 6-8).

To this we should add that in India there was only one salaried village-level worker responsible for extension activities for a group of five villages. While this did not create a big problem in advanced areas like Punjab and Haryana, it constrained the adoption of modern inputs and technology in the great majority of the countryside. Table 42 illustrates

this pattern. In China, every single brigade/village administration and production team/villager group worked as an agricultural extension agency.

Table 42. Cropped Area with High-Yielding Seeds as % of Total Cropped Area

Year	Andhra Pradesh	Assam	Bihar	Gujarat	Haryana	Himachal Pradesh
1970	11.93	6.13	14.16	14.90	20.45	6.09
1975	40.06	13.85	26.44	15.71	52.69	6.14
1980	53.26	18.63	32.27	23.43	65.20	5.71
1985	62.63	34.02	36.03	23.03	69.77	5.78
1990	74.73	46.14	44.43	35.05	80.12	5.99

Year	Jammu & Kashmir	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Orissa
1970	NA	10.38	17.50	5.08	15.21	4.10
1975	NA	35.74	17.39	20.97	27.38	9.87
1980	NA	42.94	28.71	32.37	51.35	24.23
1985	NA	41.23	28.73	36.82	52.01	30.64
1990	NA	43.00	25.61	45.83	66.09	50.66

Year	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh	West Bengal	All-India
1970	55.81	4.83	37.00	35.99	12.42	17.07
1975	71.55	12.39	39.87	39.98	21.12	29.05
1980	84.21	22.79	56.77	46.35	30.59	40.45
1985	94.56	16.96	59.37	49.59	39.75	44.31
1990	96.75	13.47	72.51	53.28	38.79	53.36

Source. Fan et al., 1999, pp. 52-53.

As Table 44 demonstrates, between 1960 and 1986 per capita grain production increased only in Punjab, Haryana, and Uttar Pradesh, while stagnating or declining in the rest of the country. As a result, India's per capita grain production increased only marginally within a period of twenty-five years. We should add two regional qualifications to this general picture. First, the level of electrification, irrigation, and the use of high-yielding seeds remained higher in Tamil Nadu than most regions. However, the increase in land productivity could not keep up with its growing agricultural population, which resulted in declining per capita grain production there. Second, Gujarat's lead in milk production and Maharashtra's lead in sugarcane/sugar production invites us to add them

next to Punjab and others as relatively advanced areas. However, the ratio of irrigated area remained very low in both states. We should also keep in mind the fact that although sugarcane is a very lucrative crop in Maharashtra, while it absorbs half of the state's inadequate irrigation resources, it is grown on only 3% of the state's total cropped area (Kale, 2014, p. 83). Therefore, defining them as moderately developed agrarian regions seems more appropriate.

Finally, as in the pre-1947 period, this narrow geographical scope kept the aggregate and national agricultural performance at a low level. Despite the continuous increase in land productivity (Table 43) due to the increase in total cropped and irrigated area and the use of modern inputs and technology, Table 44 demonstrates that India's per capita grain production increased only marginally since the start of the Green Revolution in the mid-1960s.

In contrast, as Chapter 2 and 3 have demonstrated, the mobilization of labor and financial resources of the rural population in both advanced and less advanced regions expanded the geographical scope of China's agrarian development and increased the country's overall performance. As a result, China's average annual growth rate of per capita agricultural production was 3.9% between 1961 and 1970, 1.2% between 1970 and 1980, and 2.5% between 1980 and 1993. In India, average annual growth rate of per capita agricultural production declined by 0.4% between 1961 and 1970, and increased by 0.4% between 1970 and 1980 and 1.7% between 1980 and 1993 (UNCTAD, 1993, pp. 470-472; Saith, 2008, p. 230). Labor productivity in agriculture, which is defined as the ratio of agricultural GDP to economically active population in agriculture, increased by 5.7% in China and by 0.23% in India per year between 1961 and 1969. It grew by 0.23% in China

and declined by 0.01% in India per year between 1970 and 1979. Between 1980 and 1989, agricultural labor productivity increased by 4.09% in China and by 1.92% in India per year (Fan & Chan-Kang, 2005, p. 139).

Table 43. Area, Irrigation, Yield, and Production of Foodgrains in India, 1950-1991

	Area (Million ha)	Irrigated Area (%)	Yield (kg/ha)	Total Production (Million tons)
1950-51	97.32	18.1	522	50.82
1960-61	115.58	19.1	710	82.02
1970-71	124.32	24.1	872	108.42
1980-81	126.67	29.7	1023	129.59
1990-91	127.84	35.1	1380	176.39

Source. Government of India, Department of Agriculture and Cooperation, 2004, p. 40.

Table 44. Per Capita Output of Foodgrains in India, 1960-1986

Region	1960-62	1970-72	1984-86
North	204.6	234.7	337.2
Haryana & Punjab	313.5	454.0	734.9
Uttar Pradesh	184.5	176.9	242.8
Jammu & Kashmir & Himachal Pradesh	113.9	222.1	212.4
East	162.2	152.9	152.9
Assam	145.4	137.9	121.1
Bihar	158.6	140.0	136.9
Orissa	225.1	200.1	217.1
West Bengal	147.5	151.0	154.6
South	152.3	150.4	143.9
Andhra Pradesh	180.8	175.3	161.5
Karnataka	161.6	185.0	154.3
Kerala	61.9	58.9	43.6
Tamil Nadu	160.9	146.6	134.1
Central & West	198.6	172.0	160.3
Gujarat	103.5	95.2	95.2
Madhya Pradesh	273.9	231.4	237.2
Maharashtra	165.0	110.0	120.7
Rajasthan	241.1	199.8	180.4
All-India	178.9	172.0	192.1

Source. Patnaik, 1997, p. 194.

Rural industry

The pattern of rural industrialization remained unchanged in the post-1947 era. In surplus producing agricultural regions there was a constant flow of investment from agriculture to industry. The native control in economy and administration was stronger in western India than other parts of the subcontinent in the colonial era. This helped the protection and promotion of rural industry. Sugar processing industries established by local farmer cooperatives started in western Maharashtra as early as 1934 (see Appendix B). From the 1970s on, these cooperatives (dominated by the elites called “sugar barons”) utilized the generous irrigation and electricity subsidies provided by the state government. They increased sugarcane production and expanded the sugar processing industry (Kale, 2014, pp. 62-91). The roots of Gujarat’s successful milk industry also lie in this relatively favorable regional context. The milk industry developed further during the Green Revolution (Shah, 1996). In south Gujarat, rural industries that started to develop under the support of the native rulers before 1947 advanced further with government support. Industrial estates established with the support of government that provided inexpensive land, electricity, and raw materials. Industrialization was more pronounced in parts of south Gujarat producing greater agricultural surpluses (Streefkerk, 1985). In Haryana and Punjab, the agricultural surplus started to move into industry in the first half of the 20th century. The governments of these two states implemented various programs such as the Rural Industries Projects Programme and District Industries Centers in the 1970s and provided significant financial, infrastructural, and training support to rural industry. They also effectively protected rural industry from the competition of urban industry through the industrial licensing policy (Gupta, 1982; Bhalla et al., 1990; Bhalla, 1995).

In Tiruppur district close to the city of Coimbatore in Tamil Nadu, entrepreneurial farmers from the Gounder caste had been producing a variety of lucrative cash crops such as cotton, sugar, vegetables, and spices since the early 20th century. The flow of agricultural surplus to industry started in the 1940s. This process deepened with the expansion of groundwater irrigation and the increasing availability of chemical fertilizers during the Green Revolution in the mid-1960s. Many Gounders were also employed as industrial workers in places like Coimbatore. Caste-based networks connected the surplus producing cultivators and former industrial workers and paved the way for greater investment in textile industry. Also, from the late 1960s on, the State Bank of India made its credit policy more flexible in order to support small industries, an opportunity that was utilized by the Gounders. As a result, rural industries continuously developed, which eventually made Tiruppur the textile capital of India and a major export area in the 1990s (Chari, 2000).

In a large country like India it is possible to find many other success stories like these. However, the generally low level of agricultural surplus, the general absence of resource flows from agriculture to industry through direct and indirect taxation, and the resulting low level of physical infrastructure (such as irrigation and electrification) and human capital placed formidable obstacles to the industrialization of rural India as a whole. This is more pronounced in underdeveloped agricultural regions. However, as Ashok Mitra pointed out, the limited resource transfers from agriculture to industry constrained industrial development even in advanced agricultural regions. It disincentivized wealthy farmers from shifting to industry and incentivized the development of a service sector based on the increasing consumption of these farmers (Mitra, 1977, pp. 172-173). For example, between 1967-68 and 1987-88, the value of crop and livestock production

increased by 4.5% and the value of manufacturing increased by 7.6% per year in Punjab. Given the Punjab government's significant support to the industrial sector, especially to rural industry, this agricultural growth rate might have generated a higher manufacturing growth rate than 7.5% under different conditions. A major factor behind this outcome was the inadequacy of capital investment in industry. In 1983, Punjab produced 16.2% of the raw cotton but had only 1.7% of the spindles and 0.6% of the looms in India. Similarly, it produced 21.4% of the wheat but had only 5.8% of the roller floor mill capacity of the country. This was closely related to the absence of effective agricultural taxation, which restricted the scope of industrial investment to the rich farmers' voluntary investments. Effective taxation of agriculture might have generated a much higher level of industrial investment and growth (Bhalla et al., 1990, p. 30; Bhalla, 1995, pp. 107-108).

We can now look at rural India's general industrial performance from a comparative angle based on the figures on China presented in Chapters 2 and 3. The share of the secondary sector in India's GDP rose from 15.9% in 1950-51 to 25.3% in 1980-81 and 29.6% in 1990-91 (Sivasubramonian, 2000, pp. 639-644). The share of unregistered manufacturing (which comprised the great majority of India's rural industry)⁸¹ within the GDP rose from 6.35% in 1950-51 to 8% in 1980-81 and 8.55% in 1990-91. Between 1961 and 1980, the annual rate of growth of India's khadi and village industries was less than 4.5% and less than 7%, respectively (Kumar, 1997, pp. 48-49). Between 1980 and 1989, the annual growth rate of the khadi and village industries was 5.8% and 6.4%, respectively (author's calculation based on Kumar, 1997, pp. 48-49). Finally, the average annual growth rate of India's unregistered enterprises in agro-based industries (comprising food,

⁸¹ 73.69% of the unregistered industrial enterprises and 70.86% of the workers in the unregistered industries were located in the rural areas in 1974-75 (Gupta, 1982, p. 29).

beverage, tobacco, textile, wood, paper, and leather products) was 4.2% between 1971-72 and 1981-82 and 5.1% between 1980-81 and 1990-91 (Alagh, 1996, p. 24).

China's industrial sector as a whole and rural industry grew much more rapidly. The secondary sector's share in GDP rose from 19.52% in 1952 to 48.92% in 1980 and 45.81% in 1990. The share of rural non-farm activities in China's GDP rose from 7.8% in 1980 to 24.6% in 1990. Industry's share in non-farm production was 60% in 1980 and 74% in 1990. The annual growth rate of rural industry was 13.27% between 1962 and 1978 and 19.3% between 1978 and 1990 (author's calculation based on Bramall, 2007, p. 23, 56).

In short, due to its significantly higher agricultural surplus, greater resource flow from agriculture to industry via direct and indirect taxation, and faster development of physical infrastructure and human capital, rural industry grew at a much higher rate in China than India between 1960 and 1990. This superior performance in agriculture and rural industry helped the Chinese economy to catch up with and then surpass the Indian economy. The per capita GDP of China was \$448 in China and \$619 in India in 1950. In 1978, China's per capita GDP (\$978) surpassed that of India (\$976) for the first time. The gap between the two countries' per capita GDP opened up further in the next decade. In 1990, per capita GDP was \$1871 in China and \$1309 in India (Maddison Project Database, 2013).

Kerala's Rural Development Trajectory

Within the regional variation of rural economic development in India, Kerala stands out as an especially curious case. Unlike the rest of India, the state government of Kerala carried out extensive land distribution and invested substantial resources in rural education and healthcare. As a result, Kerala shared with China an egalitarian land distribution and a

high level of social development. As Tables 6.15 and 6.16 demonstrate, its rural literacy rate was 65.72% in 1980 and 75.44% in 1990. Its rural life expectancy rate was 70.9 years in 1988-92, which was slightly ahead of the Chinese average. Thanks to consecutive land reforms in the 1960s and 1970s land distribution became more equal in Kerala than the rest of the country (Herring, 1983). Despite these similarities, however, Kerala's agricultural and industrial performance was not only lower than China's but also lower than many of the other Indian states. Table 44 demonstrates Kerala's very low per capita grain production compared to the rest of the country. In 1996, per capita manufacturing value added was \$46 in Kerala, \$75 in India, and \$225 in China. Kerala's per capita income increased by 1.88% annually between 1960 and 1973 and did not increase between 1974 and 1988 (Thomas, 2005, p. 763, 767). In sum, egalitarian land distribution and high social development did not produce economic growth in Kerala.

This mediocre performance seems to be closely related to two factors. First, as in the rest of India, Kerala did not mobilize the labor and financial resources of the rural population for agricultural capital construction. This prevented the production of a significant agricultural surplus that could be reinvested in industry. Second, the organized power of the working class in Kerala's industry discouraged the private investment and also led to capital flight to bordering states where the bargaining power of labor was weaker. Kerala remained an integral part of India's political economy, which had not imposed similar pro-labor (or anti-labor) standards across the country and this encouraged capital mobility across regions. A pro-labor polity within this sort of political economic context was unable to produce positive economic results.

Kerala was the first Third World region that elected a communist-led government through ballot box. The Communist Party of India won the state elections in 1957. This victory was immediately followed by a radical land reform bill, which increased socio-political conflict in the state and led the declaration of the president's rule in the state in 1959 that ended the first CPI rule. Following the split of the CPI after the China-India War of 1962, the newly established Communist Party of India-Marxist became a major political force in the state. The state government has alternated between the CPI-M-led leftist coalitions and the Congress since 1967 (Nossiter, 1982).

The rural development strategies of the CPI-M and the Congress in Kerala were not fundamentally different. The defining characteristic of Kerala's agrarian economy was the primacy of cash crops (such as coconut, coffee, ginger, and rubber) exported abroad and other parts of India and the reliance on grain imports. Although the soil and climate were appropriate for intensive paddy production, the state government pushed towards this direction only during times when rice imports became very expensive. In these periods, the state government encouraged small and middle peasants to reclaim more land, develop irrigation, and reduce the fallow area. However, as soon as the price pressure declined, these policies were not pursued further. This discontinuity left much untapped potential for irrigation development and intensive paddy cultivation. Although the value of Kerala's per hectare and per worker agricultural output among the highest in India due to the larger share of cash crops in total agricultural production, this was not the case in terms of per capita output value due to the state's high population (Pannikar et al., 1978, pp. 12, 21-36). Hence, although the ultimate solution of the state's economic problems lay in the development of industry, the potential for agricultural advancement had to be tapped.

However, the absence of rural labor and financial mobilization prevented this sort of intensification. As in other states, Kerala also depended on government expenditure to create jobs in infrastructure projects. The Pilot Intensive Rural Employment Project implemented in the Trithala Block in 1972-73 illustrates the limitations of this strategy. The government spent 5.35 Rs for producing one day of direct employment in the block. The block needed 2,857,000 days of employment per year in order to solve its underemployment problem. The program intended to decrease this underemployment problem by 71.9% by providing 2,055,000 days of employment. However, this was far beyond the fiscal capacity of the government. Only 840,000 days of employment were provided, which met 29.4% of the block's employment need. More importantly, even this modest employment provision did not last long. The project ended after four years. The program made a very modest contribution to the development of physical infrastructure (Gopinath et al., 1978).⁸²

The case of the Beneficiary Farmers Associations (BFAs) in Malampuzha region in southern Kerala vividly illustrates the failure of the state's efforts to carry out rural mobilization. The project was launched in 1986 with financial support from the World Bank. Its primary goal was encouraging the farmers using canal irrigation to share with the

⁸² The program evaluation report also discusses infrastructure items other than irrigation. It points out to the fact that private landownership put obstacles to the progress of road construction undertaken during the program: "One principal condition of PIREP was that land bought for its projects should be made available by free surrenders. Though a refreshing aspect of the project was that the public made many enthusiastic surrenders, in a number of cases works could not be taken up because of the lack of such surrenders. The major obstacles in this respect were political rivalries at the local level, exacting technical specifications of some projects like roads, and private ownership rights of land which prevents any cooperative action. In road works, it was reported that in the majority of the cases, about 95 per cent of the owners were persuaded to part with their lands, but a small minority refused and thus the works got held up. The width of the roads constructed under PIREP was eight meters. Certain lands, particularly wet lands under paddy, could not be made available for these roads. Had the road width been less, say about five meters, it would have been probably easier to get free land for the road projects" (Gopinath et al. 1978: 58).

state the responsibility of construction and maintenance of local irrigation facilities. Moreover, although private landownership and cultivation had remained dominant in the region, the Kerala government had recognized the productive benefits of group farming practices (such as the simultaneous and coordinated use of pesticides) and had promoted these practices for a long time. In addition to developing canal irrigation, the project also aimed to strengthen villager cooperation in this area. In order to achieve these goals, the project established a three-tiered organization in the region. The upper tier was the Project Advisory Committee combining local officials, engineers, other experts, and farmer representatives. It was responsible for planning and implementing the entire project. Canal committees with a similar composition were established for each of the fifteen canals of Malampuzha. The basic unit of the organization was the BFA, which organized local farmers at the sluice level.

A detailed evaluation report on the project (Joseph, 2001) demonstrated that mobilization of local labor and finance, the primary goal of the project, was never realized. Many of the BFAs existed only on paper. Since the Kerala government provided a grant to every established BFA, many villagers formed these organizations only in order to receive this one-time grant. Apart from these bogus organizations that immediately dissolved, many of the BFAs continued to exist on paper in order to receive the regular management subsidies provided by the government. Furthermore, although every BFA member had to pay a membership fee, non-payment of the fees was widespread. Both the canal committees and BFAs did not meet regularly to discuss ways to develop local irrigation. These organizations met mainly to make hurried decisions to receive government funds before deadlines.

Overall, in stark contrast to the project goals, farmers did not establish funds to contribute to local irrigation and all project activities depended on government spending. Peasants did not work together to construct and maintain irrigation facilities. Although the project explicitly prohibited the transfer of infrastructure works to private contractors and instead required the BFAs to undertake these activities, the great majority of the works were illicitly transferred to contractors who were paid with project funds. The goal of coordinated action by the peasants in other areas such as using pesticides simultaneously also remained unachieved. In short, as in many other states, the Kerala government failed to mobilize labor and financial resources of the rural population in agricultural capital construction (Joseph, 2011).

Moreover, since 80% of Kerala's farmers owned less than half hectare of farmland, they did not have the capacity to carry out the needed capital investment in agriculture (Krishnaji, 2007, p. 2173). Reliance on government spending limited the development of agricultural infrastructure such as irrigation. Moreover, since the state government was unable to tax the local economy effectively and/or recover the cost of electricity generation from the consumers (electricity was highly subsidized), it could not make the required investments in power generation. As a Planning Commission report on Kerala stated, "the distribution system in the state is characterized by high level of energy losses, low reliability of supply and frequent interruption" and "if adequate and timely capacity additions were made, Kerala could have enjoyed the role of a net exporter, rather than of a state severely affected by power shortage." As noted above, the use of electricity in agriculture was significantly lower in India than in China. Kerala had the lowest level of electricity use in agriculture in India (GOI, Planning Commission, 2008, p. 214, 218).

Kerala's rural industrialization was similarly unimpressive. As noted above, rural Kerala had a clear advantage over other regions in terms of human capital. However, although a healthy and formally educated labor force is an advantage for rural industrialization, what appears more important is a strong investment program training this labor force on the shop floor. This could be achieved in two different ways. The first option was state-led industrialization and the second was increasing private investment in industry. The former required effective agricultural taxation (to make the necessary investment in order to solve the infrastructural bottlenecks such as the shortage of electricity) and keeping industrial wages low to promote industrial capital accumulation. None of these happened. Only 4% of the agricultural income was taxed in 1964-65. Although agriculture comprised about 55% of the state's domestic product, it paid (via land and income tax) only 17.6% of the state's total taxes in 1961-62. In 1968-69, agriculture's share in the state domestic product was about 45% but it paid only 8.2% of the state's taxes (Government of Kerala, 1969, p. 82, 539; GOI, Planning Commission, 2008, p. 177). The expansion of education led to an increase of the white-collar government jobs where wages kept rising due to strong unionization. This drained the investable financial resources (Nossiter, 1982, p. 270). As Joseph Tharamangalam notes, "the Kerala government's ability to expand its resources is severely constrained by a variety of factors including stagnation in the tax base...Since most of the available funds for social development are spent on salaries, very little is left for current expenses or for modernizing facilities" (Tharamangalam, 1998, p. 27).

Moreover, the strength of the organized local labor force made the increase in private investment impossible. Strong labor unions and the influence of organized labor

over local politics discouraged private sector investment. Many industries using local raw materials (such as the cashew industry) migrated from Kerala to bordering states to escape organized labor (Krishnaji, 2007, p. 2174; Thomas, 2003, p. 1; Thomas, 2005, p. 768). As Basu explains succinctly, the major reason of this outcome was “the perception of the investors, who have been influenced by the character of labour in the state” (Babu, 2002, p. 1283).

Pointing out the significant role of organized labor in Kerala’s unsuccessful industrialization does not necessarily mean that workers should be blamed for economic underdevelopment. The problem was that Kerala remained a part of India’s political economy. As noted before, the private sector remained dominant in Indian manufacturing even during the heyday of state-led, import-substitution industrialization. Indian political economy allowed the mobility of capital from less profitable areas to others promising higher profits (Krishnaji, 2007, p. 2174). Local labor empowerment in this sort of setting inevitably reduced the rate of industrial investment. To this we should add two other consequences. Kerala’s high level of literacy and its geographical proximity to the Arabian peninsula encouraged its labor force to migrate to these areas to receive higher wages. This created an expanding remittance economy in the state (Pannikar et al., pp. 82-84). Due to the above-mentioned factors, rather than taking the difficult road of industrial investment, both households and the state government opted to utilize remittances to increase consumption (especially in the form of better housing) and expand social services (Nossiter, 1982, p. 270). In contrast to Kerala, rural collectives and local governments in China restricted capital mobility and continued to invest in the industries in

underdeveloped regions despite their lack of short-term profitability, which helped to create long-term industrial potential in these areas.

Conclusion

India's rural economy was very underdeveloped at the beginning of the post-colonial period. The first generation of Indian leaders and economic planners correctly recognized that increasing agricultural production and developing rural industry required the removal of the subcontinent's long-term bottlenecks in the realms of physical infrastructure and human capital. Using modern inputs and technology required a dramatic expansion of the effectively irrigated area. Electrification was necessary to use modern agricultural technology and establish modern rural industry. Creating a healthy, educated, and relatively skilled labor force was a precondition for increasingly efficient utilization of these infrastructures and technologies. Since rural India was vast and heavily populated, achieving these goals required a strong and long-term investment program.

Since the private sector was weak and reluctant to make large productive investment in the rural economy (especially in underdeveloped rural areas that did not promise high profits in the short run), a state-directed investment program was the only realistic solution to achieve these goals. However, in addition to the weakness of private capital, another characteristic of economic underdevelopment is the fiscal weakness of the state. Like its Chinese counterpart, the Indian state lacked the necessary fiscal power to carry out a heavy and long-term investment program. This capital scarcity was reduced to a certain extent by Nehru's pragmatic and skillful international relations strategy, which enabled India to receive significant financial assistance from both sides of the Cold War. However, in a vast and populous country like India, per capita effectiveness of foreign

assistance was significantly lower than in small countries with low populations such as South Korea, Taiwan, and Turkey, which benefited from the Western financial assistance significantly during the Cold War. The Indian state sought to solve the problem of capital scarcity through a radical reorganization of the rural economy. It attempted a rural mobilization strategy in the 1950s and 1960s. Despite their criticisms of its economic and political system, Nehru and the Nehruvian planners were inspired by China's strategy of establishing strong state-directed rural organizations mobilizing labor and financial resources of the villagers. They aimed to mobilize the country's vast underemployed rural labor force in capital construction projects without paying market wages. They also intended to establish local funds and taxed the agricultural sector directly and indirectly (through the price scissors) to generate the development finance necessary for modernizing agriculture and establishing rural industry. Moreover, the Indian leadership and planners were also aware of the different versions of this rural mobilization strategy in capitalist settings such as the Israeli Kibbutz. In light of these international inspirations, the Indian state decided to establish village councils and cooperative farms in order to implement a similar rural mobilization strategy.

However, in contrast to the Chinese and Israeli cases, India had a strong rural elite that was very reluctant to be disciplined by the state and capable of resisting it. During the 1960s, the rural elites successfully mobilized a large block of the landed peasantry, which influenced all major parties (including the ruling Congress party and the right- and left-wing opposition parties), and defeated the state's rural mobilization strategy. As a result, Nehru's cooperative farming scheme was not put into practice. Village councils were established everywhere, but instead of becoming the organizational ground of rural

mobilization, they turned into institutions dominated by rural elites and depending entirely on government spending. Other organizational attempts of the state to transfer a part of the responsibility of infrastructural development to the rural population (such as the villager-run irrigation associations) also failed. Hence, the great majority of the infrastructure works – irrigation, electricity, and other crucial items- continued to be carried out by private contractors employing wage labor and paid out of government budgets. The involvement of private contractors increased the cost of infrastructure works and increased the government's fiscal burden significantly.

The elite-led rural block also forced the state to let the agricultural sector remain virtually untaxed, while increasing rural development spending, subsidies, and crop prices from the mid-1960s on. In short, the Indian state failed to reorganize the rural economy and mobilize the labor and financial resources of the rural population. Therefore, it was forced to finance rural development with a narrow and weak urban tax base. As a result, compared to rural China, physical infrastructure and human capital developed at a significantly slower rate in rural India.

V. CONCLUSION

China's per capita GDP was consistently below India's since 1870 and the former was 38% less than that of the latter in 1950. The former caught up with and then surpassed the latter in the late 1970s and 1980s. By developing at a pace over twice that of India's since the early 1960s, China's agriculture and rural industry contributed to this outcome. This study has argued that two countries' differential performance in developing physical infrastructure and human capital in the countryside was one of the main factors behind this outcome. By mobilizing labor and financial resources of the villagers through the mediation of the rural collectives, Chinese state achieved a level of infrastructural and human capital development that was far beyond its limited fiscal capacity. In contrast, the Indian state's failure to develop a rural organization with similar mobilization capacity forced it to rely on its limited fiscal resources, which produced a slower and geographically narrower development of physical infrastructure and human capital compared to that of China. Moreover, while Chinese rural collectives enabled the state to tax the agricultural surplus and use it for agricultural modernization and rural industrialization, the lack of strong rural organizations prevented the Indian state from utilizing the agricultural surplus similarly.

This study presents its findings as a critique of the dominant approach in the literature on China-India economic comparison that I label as the "economic liberalization thesis." As Chapter 1 has discussed, the economic liberalization thesis views private enterprise and free market as the twin pillars of successful economic development everywhere. This approach takes the degree of incentives provided to the private enterprise

as a leading factor behind the differential economic performance of different national economies in history. As long as the private entrepreneurs (including the small, medium, and large farmers, industrialists, and traders) are entitled to clearly defined and well-protected property rights, they are believed to be capable of generating dynamic and sustained economic growth. Free markets are suggested to provide these agents the space to realize their creative potential. Capital and labor mobility allows the entrepreneurs and workers to reap their income potentials to the maximum. The most hardworking and creative agents get the highest rewards/profits within this system and vice versa.

According to the economic liberalization scholarship, the primary task of the state in economic development is to promote the existence of this sort of economic environment. Hence, private ownership of the means of production should be protected by the state. Markets and private commerce should be unrestricted. State intervention to the market has to be kept to the minimum and restricted mostly to the prevention of the over-monopolization of the economy that may disincentivize the medium and small enterprises. Maximum freedom of mobility has to be allowed to both capital and labor.

Of course, scholars have advocated very different ideas with regard to the various themes related to rural economy (including the best degree and method of land reform, the optimum scale of farm production, the ideal level of government spending in the rural economy, government's role in the determination of agricultural prices, whether agricultural prices should be inflated to incentivize farmers, whether government should protect the rural industry from the competition of the urban industry). Despite these areas of disagreement, however, the economic liberalization scholarship views the rural

economic development from the above-mentioned perspective that prioritizes the private enterprise and free market.

In order to fit the China-India story to their theoretical framework, economic liberalization scholars do not investigate much the trajectories of the rural economies of China and India before 1978. At times and in places where they touch this issue, they imply that the Chinese and Indian economies were equally illiberal and that state intervention restricted private enterprise and market freedom. Hence, they assume that both countries performed badly before 1978. According to this approach, what changed this situation was the launching of the market reforms in China in 1978. It is suggested that these reforms removed the restrictions on private property and enterprise, freed the markets, and thereby brought rural China to the path of long-term growth and prosperity. This is presented as the reason of the widening gap between the (rural) economies of China and India. As the explanation goes, the Indian government became aware of this fact and therefore launched similar reforms in 1991 that liberalized the economy in the following years, which finally brought the country into a serious economic race with China.

The Role of Collective Mobilization in Rural Development

This study has suggested that the economic liberalization thesis is incapable of explaining the divergence of the rural economies of China and India between 1950 and 1990. China's rural economy was far less liberal than India's during this entire period, yet its performance was far superior.

Private ownership of the means of production was entirely abolished in China after the rural collectivization in the mid-1950s. Until 1982, state and collective farms controlled all of the cultivated land. In the same period, household members of the collectives had the use rights of only about 7% of the total cultivated area in the form of household plots to

produce crops and livestock for self-consumption and limited private marketing. Rather than completely privatizing agriculture, the Household Responsibility System that was adopted between 1979 and 1984 brought a transformation from completely collective to a semi-collective/semi-private landownership and farming system. Local governments at the village level and above, *not* the households, continued to be the sole owners of farmland. Family farming was re-established but unlike the pre-collective era and due to the legacy of collective farming for over two decades, village collectives/administrations and villager groups continued to organize a substantial portion of farm operations in the 1980s. In stark contrast to China, private sector controlled more than 97% of India's agricultural economy and local government involvement in agricultural production was very limited from 1950 to 1990.

Similarly, rural collectives controlled all industrial activities in China throughout the period. Although the private sector's share in rural industry gradually increased in the 1980s, by 1990 collectives were still producing two-thirds of the industrial output and providing half of the industrial jobs in the Chinese countryside. Moreover, the control of the government branches over the production and employment decisions of these industries was strong during the 1980s. In stark contrast to China, the unregistered enterprises that comprised the great majority of India's rural industry were under private ownership and management entirely. In fact, the share of the private sector in Indian (rural and urban) manufacturing never dropped below 85% even during the heyday of state-led import substituting industrialization of the 1960s and 1970s and up until the liberalization of 1991.

Moreover, agricultural and industrial capital was entirely immobile in rural China until the early 1980s. Since the majority of the rural industries were controlled by the

communes and brigades until 1984 and by the township and village governments after 1984, and developing rural industry was considered as a primary task and criteria of success of the party-state cadres, industrial capital's mobility remained highly restricted. Hence, even the industries in remote and less developed areas bringing low returns were generally protected in the 1980s. The household registration system reduced labor mobility in the countryside to a negligible minimum. Restrictions on labor migration were gradually relaxed in the 1980s but still considerable by 1990. In stark contrast to China, both capital and labor were highly mobile in rural India. As our analysis of the case of Kerala in Chapter 6 has demonstrated, despite the restrictions on capital mobility put by the industrial licensing policy, private capital was capable of migrating from areas having strong labor organizations and/or lower profitability to areas having weaker labor organizations and/or promising higher short-term returns to capital. Labor was also highly mobile.

Moreover, government investment in the rural economy was greater in India than China. More importantly, the government's demands on the villagers in terms of labor and financial contributions for rural development projects were very high in China and insignificant in India. In China, rural collectives mobilized the villagers in backbreaking infrastructure projects during the agricultural slack seasons without paying market wages or not paying at all. In India, villagers were not called to work under similar conditions. In contrast to China where rural collectives transferred over 5% of their net income to the state in the form of tax between 1958 and 1981, in India the ratio of tax to total agricultural income was only 1.63% in 1960-61 and dropped below 1% in later decades. Furthermore, Chinese collectives taxed agriculture (and industry) further by allocating over 6% and

about 1.6% of their net income to collective accumulation and welfare funds, respectively. Indian villagers were never called upon to establish similar funds.

Finally, based on its monopolization of rural trade through the mediation of the rural collectives, the Chinese government consistently underpriced the agricultural products until 1978 in order to tax agriculture (indirectly and for a third time) and transferred the obtained surplus to agricultural modernization and industrialization in the cities and the countryside. Indian government wished to impose government monopoly over grain trade in the 1950s and early 1960s and for a brief moment in the 1970s but never managed to bypass the private traders and impose itself as the sole trading agent in this sector. Government control over markets remained much lower and agricultural products were not underpriced consistently in India. In short, while agriculture was taxed three times in China (through taxation, establishment of local funds, and price scissors), it was largely untaxed in India.

In short, compared to its Chinese counterpart, India's rural economy remained far more liberal and provided greater production incentives to the villagers between 1950 and 1990.

Despite this, both agriculture and rural industry developed much more rapidly in China than India in this period, without which the divergence of their economies could never happen. This reveals the serious limitations of the economic liberalization thesis.

What factors, then, can explain this divergence? This study has argued that a key reason that China's rural economy developed more rapidly than its Indian counterpart was because of its superior performance in developing physical infrastructure and human capital in the countryside. Since the Chinese state acquired greater capacity to mobilize

unpaid labor and financial resources of the rural population through the mediation of the rural collectives and their institutional legacy in the 1980s, it accomplished to develop physical infrastructure and human capital at a rapid pace and with a broad geographical scope that was far beyond its limited fiscal capacity. In contrast, the Indian state failed to establish rural organizations with similar mobilization capabilities due to the effective opposition of the well-entrenched political and economic interests in the countryside. In the absence of the mobilization of unpaid labor and financial resources of the rural population, the Indian government relied primarily on its limited fiscal resources, which produced a much slower and geographically narrower development of physical infrastructure and human capital. As a result, China's agriculture and rural industry developed at a significantly higher rate than India's during much of the post-1950 era.

I have highlighted two important facts that underline this general conclusion. First, in very large and populous countries like China and India, there have always been significant regional inequalities having important ecological, geographical, and historical reasons. Expecting to eradicate them altogether is unrealistic. Less developed regions comprised a significant portion of the (rural) population and (geographical and cultivated) area in both countries in 1950. For this reason, it was unrealistic to expect a rapid and sustained growth of the rural economy in both countries without incorporating these less developed regions into the development process. These regions did not have to grow very rapidly and catch up with the advanced areas completely, but they had to develop at a decent rate in order to keep the rural economy on a high growth track at the aggregate national level.

Second, in the early 1950s the great majority of Chinese and Indian villages (including many in the relatively advanced areas) lacked the basic infrastructure (electricity and irrigation), technology (farm and industrial machinery), and human capital (a healthy, literate, and relatively skilled labor force) that were absolutely necessary for achieving rapid and sustained economic growth. As long as these bottlenecks remained present, incentivizing the villagers (through the promotion of private enterprise, free market, light taxation, higher subsidies, and generous procurement prices) could not promote the development of the rural economy in any significant degree. Economic incentives are undeniably important but can become an important component of the development process only after the removal of these fundamental and formidable bottlenecks.

The leadership of the Chinese Communist Party and the Indian National Congress were well aware of these facts. They acknowledged that increasing land and labor productivity in agriculture and developing a modern rural industry necessitated the removal of the bottlenecks in the realms of physical infrastructure and human capital. Since rural China and India were both vast and heavily populated, achieving these goals necessitated a strong and long-term investment program. This brought the problem of development finance to the forefront of the rural policy debates and strategies in both countries. The private sector was weak and reluctant to make large-scale productive investment in the rural economy, especially in the most underdeveloped rural areas, which did not promise high profits in the short run (see Appendices A and B). This made the states the primary agents to make the required investments. Of course, the CCP and the Congress differed significantly in terms of their toleration for social inequality. While the former completely eliminated capitalist production as well as most smaller private enterprises, the latter

explicitly favored a mixed economy based largely on capitalist production. Nevertheless, regardless of the class and ideological character of these parties and the states they established, both agreed that the state was the only agent capable of making investments of such magnitude.

As a direct consequence and clear reflection of the underdevelopment of their economies, however, neither of the two states had the fiscal capacity to carry out a heavy and long-term investment program. Foreign assistance alleviated this problem to a certain extent. Geopolitical factors and choices impacted two states' capability of using this source. China viewed the United States as its enemy until the early 1970s. It fought against the US-led military coalition in the Korean War in the early 1950s. During the 1950s, China received significant assistance from the USSR. However, two countries' relationship rapidly deteriorated and the Soviet assistance halted in the early 1960s. China experienced a significant international isolation during the 1960s when it became the enemy of the US, USSR, and India simultaneously. Although its relationship with the United States started to improve in the 1970s, China did not receive any substantial aid from the US. Moreover, due to its quest to overcome international isolation through developing good relations with the Third World governments (such as Pakistan, Tanzania, and several others), China became the largest non-OECD international aid provider in the 1960s and 1970s. The financial assistance it provided to other countries significantly exceeded the Soviet assistance that it received in the 1950s. As a result, China became a net capital exporter in the post-1950 era. Hence, foreign assistance did not make a significant contribution to China's development finance.

Unlike the Maoist China, India usually followed a pragmatic and skillful international relations strategy, which enabled it to receive significant financial assistance from both sides of the Cold War (the US and the USSR) and international institutions such as the World Bank, Asian Development Bank, Ford and Rockefeller foundations. As a result, in stark contrast to China, India remained a net capital importer. This certainly reduced its capital scarcity. However, in a vast and populous country like India, per capita effectiveness of foreign assistance was significantly lower than small countries with low populations (such as South Korea, Taiwan, and Turkey that benefited from the Western financial assistance significantly during the Cold War). Hence, although not as mighty as the challenges faced by China, India continuously struggled with fiscal problems, which required a solution *within* the country.

Prominent international development scholars of the time such as Ragnar Nurkse and Gunnar Myrdal proposed the underdeveloped countries with large reserves of underemployed rural labor employ a new development strategy based on the substitution of capital with the unpaid/underpaid labor power of the underemployed villagers. They suggested that in the context of disguised employment in the countryside of the underdeveloped countries, a significant number of villagers could be transferred from farming to construction work without any drop in the existing level of agricultural output. Since the transferred workers would continue to have the same amount of food on the table and share the same house with their family members as before, if the national governments managed to mobilize these workers in capital construction projects, they would not need to pay wages at all or pay very little to them. This strategy would bring a solution to the problem of underemployment and capital scarcity simultaneously and provide the much-

needed physical infrastructure, schools, and clinics in the countryside. Long before the publication of Nurkse and Myrdal's works, Mao Zedong proposed a similar strategy in China and the CCP experimented with it in the liberated zones in Northwestern China since the 1930s.

Although the mobilization of the unpaid labor power of the villagers would alleviate the problem of capital scarcity significantly, it was insufficient to solve it completely. Villagers could be employed in the construction of both agricultural and industrial infrastructure. However, establishing modern agriculture and industry in the vast countryside required large capital investment, which cannot be solved by labor mobilization alone. This directed the attention of the Chinese and Indian leaders to the experience of two major countries that exemplified successful latecomer industrialization outside the Western world: Japan (since the Meiji era) and the USSR (since the late 1920s).⁸³ Their experiences showed that in addition to mobilizing their labor, the state mobilized the financial resources of the villagers to finance agrarian and industrial investment. Although agricultural sector produced limited surplus in the initial stages of the Japanese and Soviet economic development, both states taxed the surplus product of the peasantry to achieve this goal.

The taxation of agriculture in these countries took three different forms. First, the state called the villagers to establish local funds (through compulsory savings) in order to finance a portion of local investments. Second, a significant portion of the agricultural

⁸³ As Chapter 1 explained, South Korea and Taiwan's experience of mobilizing the agricultural surplus for agrarian modernization and industrialization had significant similarities with that of Japan and the USSR. They also used the method of labor mobilization for these purposes. However, since the Korean and Taiwanese experiences took place in the 1960s and 1970s, they did not provide inspiration to the Chinese and Indian leaderships in the 1950s and early 1960s.

surplus was taxed directly by the state. Third, by establishing (complete or partial) monopoly of the agricultural trade, the state kept the rise in agricultural prices at a lower level than the rise in the price of the industrial goods purchased by the peasants (especially for the agricultural inputs supplied by the industrial sector like fertilizers). In other words, it opened up the “price scissors” in favor of the industrial sector. This unequal exchange between agriculture and industry functioned as a third (and indirect) form of agricultural tax that was utilized to carry out state-directed agrarian modernization and industrialization in the cities and the countryside.

Chinese and Indian leaders both viewed the mobilization of labor and financial resources of the villagers as the most feasible way to implement a long-term program of heavy investment in the countryside. However, putting this strategy into practice was immensely difficult. The state had to create an atmosphere of dedication and discipline in the countryside. Mobilizing the villagers in backbreaking construction work without wage payment for years required the state to convince large sections of the peasantry that the assets they created would not be captured by the elites and would serve their long-term interests. It also required a strong belief among the villagers in the developmental effectiveness of cooperating with their neighbors and sacrificing their short-term interests for obtaining long-term benefits. Effective taxation of agriculture similarly required a belief in the wisdom of sacrificing the short-term for long-term interests. Finally, effective mobilization of labor and financial resources of the villagers required the state to acquire the capacity to use compulsory methods whenever the voluntary ones did not work. These could happen only through a radical reorganization of the rural economy through installing strong state-directed rural organizations.

The Chinese state succeeded in establishing this sort of rural organization. Land reform of 1947-52 weakened the rural elites and the abolition of private landownership following rural collectivization in the mid-1950s eliminated their power. As a result, no elite intermediary was left between the party-state and the peasantry. This flattened the political economic terrain, and enabled the state to establish rural collectives in every single rural region. Rural collectivization created a giant *non-salaried* bureaucracy in the countryside. Establishing party organizations in every commune and brigade along with the administrative apparatuses of the state helped the Chinese government to demand services from the rural cadres as part of their obligations as party members and without paying them wages. Every Chinese commune had a few salaried cadres and functioned as the formal link between the higher-level administration and the commune. However, the remaining part of the commune administration did not receive salaries. More importantly, there were about 22 million non-salaried cadres at the brigade and team levels. This reduced the financial cost of rural administration significantly.

The non-salaried collective cadres mobilized the country's vast underemployed rural labor force in capital construction projects. The villagers' contribution to construction work was organized under two main categories of labor. The first category was *obligatory labor*. All collective members were legally obligated to allocate about 3% of their total workdays to capital construction projects every year without receiving any sort of payment. The second category was labor paid through *work points*. Similar to all other types of work, collectives allocated work-points to remunerate the labor of their members in excess of the above-mentioned 3% limit. Hence, all construction labor in excess of the 3% of total workdays was not unpaid labor in the *formal-legal* sense of the term. However, in reality

this was still unpaid labor because the income from the collectives did not have any source other than their total agricultural and industrial output by the end of the year. Given the fact that constructed infrastructures have gestation periods and do not increase the total output in the year of their construction, no matter whether or not the villagers worked in construction, the total monetary value of the collective income distributed among them was fixed. Allocation of work-points for construction works only increased the number of total work-points and automatically decreased the monetary value of each work-point. Since villagers produced the total output from which a part was used for paying their labor in construction works, in reality villagers were paying themselves. Moreover, since collective members always wished to increase their portion within total collective income by earning more work-points, using the work-point system to remunerate construction work was a well-crafted strategy from the state's point of view since it increased the villagers' incentives to participate these projects for increasing their portion within the fixed collective income. In brief, the collective rural labor spent in infrastructure works was unpaid to a very significant extent.

We have seen that rural collectives mobilized more than one-quarter of China's total rural labor force in farmland and water conservancy works. Although this figure alone is incredible enough, it is an underestimate for two reasons. First, large-scale mobilization of rural labor started in the first half the 1950s. Second, the unpaid labor comprised a large part of the labor used in constructing rural schools, clinics and hydropower stations. In addition to mobilizing a very high amount of rural labor, Chinese collectives also mobilized the financial resources of the peasantry. In addition to transferring a significant portion of their net income to the state in the form of direct tax and allocating larger sums to collective

accumulation and welfare funds, rural collectives transferred significant resources to state-directed agrarian modernization and industrialization effort via the mechanism of price scissors. Moreover, they effectively checked and reduced the destructive competition among the villagers (including activities such as breaking other villages' dikes and diverting river water to one village or a group of villages at the expense of others), which was among the major factors behind China's hydraulic decline since the late 18th century.

On the other hand, a balanced assessment of China's rural economic performance necessitates taking negative characteristics of the collective system into account. First, Chinese collectives did not incentivize the villagers to the extent that India's private rural economy did. Second, the Great Leap Forward catastrophe (1959-62) happened at the beginning of the collective era. The policy mistakes leading to the catastrophe were closely related to the dramatic increase in state power in the countryside following collectivization. Since the state established itself as the sole authority even at the lowest levels of the rural economy, faulty planning and extremely exaggerated expectations of the Maoist leadership with regard to the amount of crops that peasants were capable of delivering to the state could lead to a chain of events leading to extreme levels of state extraction. Since the administrations of the collectives did not have the political power to challenge the central authority and instead forced the peasantry to deliver their crops at the expense of their consumption requirements, a huge catastrophe happened, which took about 30 million lives and brought the rural economy to the brink of collapse. This would not happen in a private economy with limited state power.

On the other hand, although the Cultural Revolution decade witnessed several ultra-leftist policy mistakes, the Chinese leadership and collectives never repeated a similar

mistake of extreme extraction. It is necessary to stress that the only lesson that they took from the GLF catastrophe was that extreme extraction should be avoided. Although the mobilization of rural labor in wasteful activities such as producing steel in backyard furnaces was also criticized, the state and collective cadres never considered compromising the strategy of long-term and large-scale mobilization of labor and financial resources of the villagers. As a result, although the GLF catastrophe reduced the overall economic performance of China's rural economy and the Indian countryside did not experience any catastrophe in the post-1950 era that was comparable to the GLF, the continuation of the mobilization strategy enabled China's rural economy to develop faster and geographically broader than its Indian counterpart.

Despite their criticisms of its economic and political system, Nehruvian planners were inspired by China's experience. They were also well aware of the Japanese and Soviet experiences of capital accumulation, and paid close attention to different versions of rural mobilization strategy in capitalist settings such as the Israeli Kibbutz. Inspired by these international examples, the Indian government attempted to establish village councils and cooperative farms in order to implement a similar mobilization strategy. However, in contrast to these cases, post-colonial India had a strong rural elite that was very reluctant to be disciplined by the state and capable of resisting it. During the late 1950s and 1960s, the rural elites successfully mobilized a large block of the landed peasantry that influenced all major parties (including the ruling INC and the right- and left-wing opposition parties), and defeated the state's rural mobilization strategy. As a result, Nehru's cooperative farming scheme was not put into practice. Two decades later, all cooperative farms (including bogus ones) comprised only 0.3% of the country's total cultivated area.

Village councils were established everywhere, but instead of becoming the organizational basis of rural mobilization, they soon turned into institutions dominated by private economic interests and dependent entirely on government spending. As a result, in contrast to the Chinese state which mobilized over one-quarter of the *total rural labor force* in capital construction projects continuously throughout the 1960s and 1970s without wage payment, the Indian government mobilized a maximum of 7.2% of the *unemployed rural workers* in capital construction projects for only temporarily and with wage payment. Other organizational attempts of the state to transfer a part of the responsibility of infrastructural development to the rural population (such as the villager-run irrigation associations) also failed.

As a result, the great majority of the infrastructure works (irrigation, electricity, clinics, and schools) continued to be carried out by private contractors employing wage labor paid out of government budgets. Institutionalized corruption involving the private contractors and local government officials increased the cost of infrastructure works and thereby increased the government's fiscal burden significantly. Also, in contrast to China where non-salaried cadres provided agricultural extension services in every village, the Indian government relied on salaried extension officers. Due to the fiscal constraints, on average one extension officer was able to serve a group of five villages. In short, agricultural extension services were more expensive and less effective in India. Finally, in contrast to China where rural collectives effectively checked the destructive competition among the villagers, Indian state failed to do so due to its weak organizational presence in the countryside.

Starting in the mid-1960s, the rural block also forced the Indian government to let the agricultural sector remain untaxed, and to increase development spending, subsidies, and crop prices. The ratio of tax to agricultural income remained very low. The ratio of collected water fees to capital investment in and working expenses of canal irrigation decreased significantly. In short, the peasantry successfully transferred an increasing part of the burden of irrigation finance to the state in the post-colonial period. The resulting decline of canal and tank irrigation gave way to the expansion of electric-powered tubewells, which represented a more individualized form of irrigation due to its minimal reliance on labor and financial cooperation among the cultivators. However, this did not decrease the fiscal burden of the state because the farmers' block successfully forced the state to keep electricity prices very low. Finally, local self-finance did not play any significant role in the construction and running of rural schools and clinics. In short, the Indian state was forced to finance the development of physical infrastructure and human capital in the vast countryside with a narrow and weak urban tax base.

As a result, compared to rural China, physical infrastructure and human capital developed at a significantly slower rate in rural India. The ratio of irrigated area, which was about 17% in both countries in 1950, increased to 50% in China by 1980, while in India it only reached 33% a decade later. Similarly, the two countries started with a rural electrification rate of less than 1% in 1950, and while both countries made substantial strides in electrification, India remained far behind China in using electricity in agriculture. India also remained far behind China in improving the rural literacy rate. The gap between life expectancy in China and India increased from 3 years in 1950 to 10 years in 1990. In

sum, a significant gap opened up between the two countries' rural infrastructure and human capital.

The absence of nationwide rural mobilization made each region's agriculture highly dependent on the investment capacity of its local government and farmers, which reproduced the colonial pattern of regional variation in the post-independence period. In regions like Punjab and Haryana and parts of Tamil Nadu, Maharashtra, and Gujarat, which achieved a significantly higher level of rural economic development than other regions in the colonial era, farmers had the capacity to make significant investment in infrastructure and technology. Their wealth and influence in the political arena was also significant. They successfully pressured the state governments to give them significant financial, infrastructural, and technological support especially during the Green Revolution starting in the mid-1960s. The combination of government and private investment led to continuous advancement in these regions.

The other rural regions of the country inherited a very underdeveloped infrastructure and technology, and lacked a class of relatively knowledgeable and entrepreneurial farmers capable of making significant productive investment. Although these areas received public investment without paying much tax, the combination of low private investment and limited fiscal capacity of the local governments constrained their agrarian development, and thereby also constrained the flow of resources to rural industry.

Finally, the experience of the Kerala state of India can also be understood within this explanatory framework. The particular historical trajectory of social movements and progressive administrations (including the enlightened princely rulers of the colonial period, the Left Front governments led by the Communist Party of India-Marxist, and the

governments of the local Congress organization) created high levels of social development and egalitarian land distribution. The level of basic education and healthcare in Kerala was quite similar to the Chinese average (and better than several less developed regions of China). Land distribution was also highly egalitarian albeit not as egalitarian as that of China. However, without implementing a long-term strategy of labor and financial mobilization in the countryside, land reform and high social development alone are insufficient to develop the rural economy in populous underdeveloped regions. Like the rest of India, rural mobilization remained unimplemented in Kerala and the state government had to shoulder the entire financial burden of rural development with an inadequate urban tax base. Kerala's experience has also shown that a private sector-oriented rural development strategy is no panacea for rural underdevelopment. As we have seen, due to Kerala's better-organized labor force, private capital moved to bordering states that had a less organized labor force and promised higher short-term profits. The combination of weak government finance and low private investment produced a very slow rate of rural economic development in Kerala.

In sum, this study has explained the divergence of the rural economies of China and India based on the former's superior performance in developing physical infrastructure and human capital. Since the Chinese state acquired greater capacity to mobilize unpaid labor and financial resources of the rural population through the mediation of the rural collectives and their institutional legacy in the 1980s, it was able to develop physical infrastructure and human capital at a rapid pace and broad geographical scope far beyond its limited fiscal capacity. In contrast, the effective opposition of the entrenched economic and political interests in the countryside prevented the Indian state from establishing rural organizations

with similar mobilization capabilities. The resulting absence of the mobilization of unpaid labor and financial resources of the rural population forced the Indian government to rely primarily on its limited fiscal resources. Although India, unlike China, was a major foreign assistance recipient in the post-1950 era, in a vast and populous country like India, foreign assistance was incapable of compensating for the absence of labor and financial mobilization in the countryside. This produced a much slower and geographically narrower development of physical infrastructure and human capital in the Indian countryside. As a result, China's agriculture and rural industry developed at a significantly higher rate than India's between 1950 and 1990.

The Impact of Political Democracy and Economic Liberalization

In addition to the general framework of this study that is explained above, I would like to address two issues briefly. The first one is the differential impacts of democracy and authoritarianism (or "totalitarianism" in the case of China in the Mao era) on economic development. This is a subject that is often brought forward to explain two countries' development gap in academic publications and mass media. During my conversations with scholars and non-academic researchers in my fieldwork in China and India in 2012 and 2013, many people also emphasized this factor. This study does not intend to ignore the existence of this factor. I agree that the developmental impacts of democracy and authoritarianism may be important in *certain cases*. However, this study did not use the concepts of democracy and authoritarianism as explanatory variables for three main reasons. First, there have been many authoritarian and totalitarian regimes that have not succeeded economically to the extent that China did. Hence, authoritarianism can be an advantage but not a guarantee of economic success. Second, many advocates of the

economic liberalization thesis do *not* see authoritarianism as an economic advantage. On the contrary, a broad array of scholarship on economic development (emphasizing the advantages of economic liberalization) often mentions political democracy as a precondition of long-term economic success (Acemoglu & Robinson, 2012; Huang, 2008).

Finally and more importantly, the concepts of democracy and authoritarianism are too broad to capture (and in fact, do not say much about) the *specific mechanisms and paths* leading to successful economic development. In contrast, this study focused on specifying the mechanisms and paths of development that generated the divergence of the two rural economies over time. For instance, I have no doubt that the Indian state's failure to tax the agricultural sector effectively and keep the growth rate of crop prices lower than that of the industrial prices was related to the existence of political democracy. The rural elites who had the capacity to mobilize the votes of the commoners were often able to use the ballot box (as well as the protests organized by farmer organizations that are controlled by them) as a tool to pressure the successive governments effectively. In other words, while the structural basis of the two countries' differential performance of the development of physical infrastructure and human capital was the private versus the collective rural economy, this structural difference was closely related to India's (inequitable) democracy and China's (egalitarian) authoritarianism, especially before the 1980s. For this reason, as an alternative to often simplistic and abstract uses of the concepts of democracy and authoritarianism, this study focuses on the specific structural mechanisms and paths of economic development in two countries. Hence, rather than attempting to reject the explanations based on different political systems, I actually aim to encourage this line of scholarship to adopt a more productive research agenda by taking its attention to specific

mechanisms and paths of development that can be connected to different types of democracy and authoritarianism.

The second issue to address is the role of economic liberalization in two countries' rural economic development. I have critiqued the economic liberalization thesis for ignoring the fact that dynamic economic development is possible under non-private economic systems. I therefore do not intend to repeat a similar type of dogmatism by claiming that rural economic development is impossible without collectivization. That would be absurd given the rural economic trajectory of East Asian capitalist states noted above. On the other hand, we should keep in mind both the limited comparability of the East Asian capitalist states to China and India as well as the importance of collective mobilization in East Asian rural development as a whole, which are discussed in Chapter 1. As long as we do not forget them, there is no harm in searching for the possible (*but not guaranteed*) specific contributions of economic liberalization to economic development. If a rural economy has already acquired a strong infrastructure and human capital basis, it can develop effectively under a private or collective economic framework.

One major mechanism that a country having a strong physical infrastructure and developed human capital can benefit from is the integration with the world market. Both the demand coming from the world market and the entry of the foreign direct investment helped rural China to grow more rapidly than before. Overall, it is certain that economic liberalization can play a *supplementary and supportive role* in certain specific cases and periods of development but it cannot be treated as a central factor that explains the takeoff of rural economic development in countries such as China and India.

Normative and Policy Implications

Finally, I would like to address the normative and policy implications of this study briefly. The most fundamental normative issue is the desirability of rural modernization and industrialization. This question was addressed poignantly by Barrington Moore in his classic work *The Social Origins of Democracy and Dictatorship-Lord and Peasant in the Modern World* (Moore, 1966).⁸⁴ In his book, Moore provided one of the best expressions of the dilemma of modernization and the scholarship about it:

There is no evidence that the mass of the population anywhere has wanted an industrial society, and plenty of evidence that they did not. At bottom all forms of industrialization so far have been revolutions from above, the work of a ruthless minority...The tragic fact of the matter is that the poor bear the heaviest costs of modernization under both socialist and capitalist auspices. The only justification for imposing the costs is that they would become steadily worse off without it. As the situation stands, the dilemma is indeed a cruel one. It is possible to have the greatest sympathy for those responsible for facing it. To deny that it exists is, on the other hand, the acme of both intellectual and political irresponsibility (Moore, 1966, p. 410, 506).

Although the subject is certainly debatable, I believe that Chinese and Indian villagers would steadily worse off without economic modernization. The rural political economy of both countries in the pre-1950 period had a great deal of inequality and oppression and avoiding modernization would not only fail to solve these problems but also deny the rural poor the potential welfare benefits of increasing economic output.

Even if we accept the modernization as a worthy goal, that does not mean endorsing all means of achieving it. Moreover, we can recognize the effectiveness of some means without endorsing them. Karl Marx, for instance, recognized the dynamic potential of capitalism for spurring economic growth, while at the same time condemning it and

⁸⁴ It is worthy of notice that in addition to many other important contributions, Moore's work was one of the pioneering studies in the Western academic literature that pointed out to the absence of strong state-directed rural organizations as a fundamental weakness of the Indian economy (Moore, 1966, pp. 390-410).

predicting its demise. Likewise, Robert Allen and Vladimir Popov, two eminent development economists, have pointed to the successful economic record of the Stalin period, while developing sharp criticisms of Stalinism (Allen, 2003; Popov, 2014).

As I find that compulsory labor mobilization and taxation by rural collectives helped China to develop its rural infrastructure and human capital significantly more than India, does this mean that the same model is advisable for the poor countries of today? I argue that China's experience with collective mobilization is a historically specific event that does not have to be replicated by any country today. On the other hand, since this experience also offers us important positive lessons that may contribute to the formulation of an egalitarian rural development policy for today, it should not be discarded either.

Of course, we need to distinguish different historical contexts in which compulsory labor mobilization has been utilized. In the pre-capitalist agrarian systems such as the Tokugawa Japan, Ming and Qing China, and the Mughal India, both the state and the landed elites used the *corvée* labor to construct and maintain infrastructure. Since land distribution was highly unequal under these regimes, the elites were able to gain control over and benefit more from the constructed infrastructure while the rural poor benefited very little or not at all.

There have been two different socio-economic contexts of the use of compulsory labor under capitalism. In Japan and Prussia in the late 19th century, peasants supplied unpaid labor that benefited the elites who were transforming themselves from feudal landlords to agrarian capitalists. This was essentially similar to the *corvée* labor in the pre-capitalist agrarian systems. In the second type, which was practiced in Japan, South Korea, and Taiwan in the post-1950 era, the state mobilized the peasants (by using a combination

of propaganda and compulsion) to carry out much of the needed capital construction without paying wages. However, since significant land reforms were carried out in these countries in the late 1940s and early 1950s, the benefits of the created assets were shared by a larger segment of the peasantry relatively equally rather than being captured by a tiny elite.

The Chinese collectives represented a third (and socialist) mode of compulsory labor. In this context, compulsory labor mobilization was organized on the basis of collective landownership and guaranteed subsistence for every villager. No elite class existed to take control of the created assets. Although the state taxed a substantial portion of the increased agricultural surplus produced thanks to these assets, a portion of the surplus was retained in the countryside and used for the expansion of the local economy and increase the income of villagers at a slow but steady pace. Therefore, the unpaid labor mobilized in rural China was not unpaid in the same way as it would be in the capitalist and pre-capitalist social formations. Hence, one of the key lessons that should be derived from the Chinese experience is that labor mobilization for rural modernization can serve the interests of the rural poor as a whole in a highly egalitarian fashion.

On the other hand, even though the Chinese collectives succeeded to increase the economic output and distributed it fairly equally to the villagers, the replication of the same model in today's Global South does not seem justifiable for three reasons. First, although the effective taxation of the agricultural surplus can still contribute to industrialization and economic growth, since the share of agriculture in the national economies of the countries such as India has decreased substantially, the potential contribution of agriculture to economic growth is much more limited today than in the 1960s and 1970s (Bernstein, 1996,

2006; Lerche et al., 2013). Second, although the physical infrastructure and human capital developed much more slowly in countries such as India than it did in China due to the absence of collective labor and financial mobilization, since this slow development continued steadily over decades, there is less need today than before to develop infrastructure and human capital rapidly. For these reasons, there is limited economic justification for the replication of the Chinese model today.

Finally, even in the regions where such an economic argument can still be made, the use of authoritarian and compulsory methods still seem unjustified. I believe that democratic and voluntary cooperation and mobilization of the villagers should be advocated in the regions where these economic requirements exist. Moreover, egalitarian land reform should be carried out before calling the villagers to work in capital construction projects. This will ensure the villagers that they, not the elites, would reap the benefits of labor mobilization. The Chinese experience is worthy of recalling in this respect. Although it is impossible to empirically determine what percentage of the labor mobilization in China was organized through voluntary methods, the available sources (that I derive from in this study) clearly shows that there was a strong element of voluntary participation even though it cannot be called voluntary in the absolute/pure sense of the term because the collectives often had the option of using compulsion when voluntary methods did not work. If the villagers choose not to cooperate after land reform, states should not impose it through compulsory methods that may violate the human rights of the villagers.

In short, although the Chinese experience provides us positive lessons about the potential benefits of labor and financial mobilization in the countryside, the economic and

normative arguments noted above should be carefully considered when evaluating its relevance for the poor countries of today.

Directions for Future Research

In the future I intend to extend the analysis of this study in two main directions. The first direction will be the comparison of China and India in the post-1990 era. Both countries have continued to experiment with policies that attempt to mobilize rural labor. First, there has been an increasing concern about the retreat of the state and the disorganization of the countryside in Chinese academic and policy circles especially during the last decade. Hence, it is necessary to investigate whether or not recent government initiatives that have sought to address this problem have involved attempts to revitalize the country's strong tradition of labor and financial mobilization. The Mahatma Gandhi Rural Employment Guarantee Act of 2005 is also worthy of research. Although it shares similar economic limitations with previous government-sponsored rural employment programs (such as the reliance on government funding, providing wage employment rather than mobilizing unpaid or low-cost labor, and prioritizing poverty alleviation rather than asset creation), it has been the largest and longest central government-sponsored rural employment program ever implemented in India. Hence, based on the framework proposed in this study, it is possible to formulate new research projects to investigate whether and to what extent labor mobilization has played a role in two countries' recent rural economic development and to which one's favor.

Finally, this study's analytical framework can be used to analyze the rural economic development trajectories of other countries of the Global South that shared similar conditions with China and India in the early 1950s. The obstacles to and the extent of state-

directed rural mobilization and its impact on the development of rural economy can be examined in single-country or comparative studies with regard to countries such as Indonesia and Pakistan that had underdeveloped rural economies having large reserves of underemployed labor. This will help us to have a better understanding of the broader role of state-directed rural mobilization in the differential performance of the rural economies of the Global South.

APPENDIX A: CHINA'S RURAL ECONOMY BEFORE 1952

In *The Eighteenth Brumaire of Louis Bonaparte*, Marx famously remarked: “Men make their own history, but they do not make it just as they please; they do not make it under circumstances chosen by themselves, but under circumstances directly encountered, given and transmitted from the past” (Marx [1852] 1972, p. 10). Although this statement has been subject to different interpretations, it conveys one clear message that is important for the present study: initial conditions matter. A proper assessment of the developmental performance of a country cannot be made on the basis of a randomly chosen benchmark. For instance, we cannot evaluate the performance of a previously poor country by strictly applying the standards set by the advanced countries. The proper judgment should be based on the distance that it has taken from its initial point. Accordingly, a proper assessment of the developmental performance of the People's Republic of China requires us to understand the prerevolutionary rural economy that was transmitted to it.

As the leading organization of a primarily peasant-based revolution, what strengthened the Chinese Communist Party during the two decades preceding the revolution was the deep crisis in the countryside where about 90% of the country's population lived. The crisis, which had economic, social, and political dimensions, had its roots going more than 150 years back. China's economic performance (in terms of both total and per capita output) compared to the West and Japan deteriorated rapidly from the late 18th century onwards (Arrighi, 2007; Maddison, [2003] 2006; Pomeranz, 2000). Numerous attempts were made to reverse this decline both under the Qing imperial administration (until its collapse in 1911) and the Republican regime that followed it with

varying degrees of (temporary and regional) success but none succeeded to reverse it permanently at the general level. As a result, China became an “exceedingly poor” country (Myers, 1980, p. 21) in the early 20th century, with “shattered rural economies and impoverished small rural producers” (Zhan, 2013, p. 96).

We need a systematic analysis of the problems of pre-1950 rural China in order to understand the magnitude of the challenges that the PRC leadership faced as soon as it took power and its rationale for rural collectivization. This analysis will also enable us to compare rural China’s economic performance in the pre- and post-collectivization periods. Only on this basis can we compare rural economic performance of China and India between 1950 and 1990. Therefore, instead of providing simply some background information, this appendix aims to analyze the fundamental problems of China’s rural economy before the start of collectivization. It follows a basic framework based on two fundamental challenges for economic development in the world since the 18th century. These components/challenges are: a. producing an increasing amount of agricultural surplus by developing the agricultural infrastructure, technology, and skills and b. using this surplus for financing (modern) urban and rural industries. *Some* of the Western countries and (to a certain extent) Japan externalized this process *partly* through colonialism. By appropriating the agricultural surplus of their colonies to finance industrialization at home, colonial powers relived some of the burden on their own rural producers (Bagchi, 2010; Patnaik, 2002; Patnaik, 2006; Patnaik, 2012, pp. 236-238). Nevertheless, internally generated agricultural surplus played an undeniably critical role in the industrialization of early and late colonizers like Britain and Japan (Brenner & Isett, 2002; Hayami, 1975; Hung, 2008, pp. 575-82, Karshenas, 2004, pp. 176-84). More importantly, countries like China, India,

and (to a large extent) Russia, which could not externalize the problem of financing early industrialization through colonialism, had to rely on their agricultural sector (Allen, 2003; Popov, 2014). For these reasons, in this chapter and the next, I will follow a simple, two-pronged framework based on a. the production and b. channeling of the agricultural surplus. This framework will help us to focus on the fundamental issues and avoid unnecessary attention to details of secondary importance.

This chapter is composed of five sections. After this Introduction comes the second section which introduces the general characteristics of prerevolutionary rural China that did not change *fundamentally* until the revolution. The third section examines the main features of the periods of economic dynamism with a particular focus on the Qing dynasty in the first three quarters of the 18th century since it represents the highest economic level attained by prerevolutionary rural China and shares some important similarities (as well as differences) with the PRC between 1950 and 1990. I will argue that during periods of economic success, the state acquired considerable autonomous power to keep the short-term individual and local interests at bay and implement long-term, large-scale development plans. High autonomous power also enabled the state to control and mobilize the land, labor, and financial resources of the rural population to create stronger infrastructure, especially hydraulic facilities, and human capital, which played vital roles in increasing land productivity and developing handicraft/industrial production. The fourth section examines three main features of the periods of economic stagnation (decreasing scale and increasing fragmentation of farm production, decline of the autonomous power of the state, inability of the state to control/mobilize the agricultural surplus for modern industrialization) with a special focus on the period from the late 18th century until 1950.

The final section summarizes the main findings of the previous sections and analyzes the CCP's logic in collectivizing the rural economy based on these findings.

General Characteristics of Prerevolutionary China's Rural Economy

In order to evaluate the developmental pattern of the prerevolutionary China's rural economy properly, it is necessary to briefly analyze its general characteristics that did not change fundamentally until the 1950s. These characteristics are high person-to-land ratio, unequal land distribution and dispersed cultivation, small and fragmented farms, surplus transfer from small peasants to the landed elite in the form of rent, loan interest, and taxes, and unproductive landlordism.

Small and fragmented farms

We can start our discussion by looking at the scale of agricultural production in China. The population of China increased from 72 million in 1400 to 123 million in 1650, 260 million in 1750, 381 million in 1820, and 569 million in 1952 (Maddison, 2007, p. 37). Subsequent waves of territorial expansion and land reclamation under different dynasties were never strong enough to reverse the tendency of increasing population pressure over land. Per capita cultivated land decreased from 5.45 *mu*⁸⁵ (0.89 acre) in the early 12th century to 5 *mu* (0.82 acre) in 1400 (Heijdra, 1998, p. 450). Between 1753 and 1812, per capita arable land declined by 43 percent, to less than half acre per capita (Rowe, 2009, p. 150). Partible inheritance exerted an additional downward pressure on the scale of production. By enabling each married son to take his share from his family's farmland to

⁸⁵ One *mu* is equal to 0, 1647 acre.

set up his own family farm, it contributed to the diminishing size of the family farms.⁸⁶ The average farm size in China decreased from 4.2 acres in 1400 to 3.4 acres in 1600, and to 2.5 acres in 1850 (Brenner & Isett, 2002, p. 620). In the 19th and 20th centuries an average Chinese farm was about one-sixtieth of the average American farm and about one-tenth of the average French farm (Huang, 1985, p. 14). Furthermore, the traditional concern with distributing more or less equal quality of land to married sons led to extreme land fragmentation.⁸⁷ An average Chinese farm was split into 6 pieces scattered across the village (Maddison, 2007, p. 71).

The dominance of small and fragmented farms under increasing population pressure made several important impacts on the rural economy. Firstly, scattered fields of irregular shapes and different soil and topographical conditions made the efficient use of labor and capital very difficult. Secondly, a portion of the cultivable land was lost due to the existence of paths and boundaries between farms. Thirdly, as we will see below in more detail, intense competition over land and water resources created a potential for intense conflicts among households, villages, and regions, and threatened social order and production organization in different periods (Lin, 1997, pp. 36-37). Fourthly, although regional variations exist, decreasing scale of production prevented the emergence of

⁸⁶ The famous Russian agricultural economist, A.V. Chayanov linked the size of family farms to the size of the nuclear family systematically. As long as the number of the family members increases, household farm remains undivided. When the children come to the working age, the labor force of the household expands. The household becomes capable of producing more and therefore improves its income. This expansionary cycle ends when the children marry and take their share of the family farm to set up their own family farms (Chayanov, 1966). These cycles of expansion and contraction existed in China as well, but with a crucial difference. In contrast to rural Russia that Chayanov's research focused on, where man to land ratio has been low and therefore it was more possible to witness a significant increase in the scale of production (and maybe even in living standards) temporarily, the man to land ratio remained very high in rural China and therefore expansionary cycles never had a similar potential to improve the economic position of the household.

⁸⁷ "Land varies in quality from acre to acre; one man must not have all the best and another the worst; a farmer needs both dry and wet land, hilly land for fuel and manure as well as level land for his crops; the dispersion of plots enables him to pool his risk of flood and drought" (Tawney, 1932, p. 39).

capitalist farms employing wage labor all over the country. Finally, land scarcity is responsible for the very low share of animal husbandry in Chinese agriculture compared to its American and European counterparts (Huang, 1985, p. 14, 117). For the same reason, the use of animal power in agricultural production remained limited (Li, 1998, p. 45), which made a downward pressure on labor productivity (Brenner & Isett, 2002, pp. 621-22).

Unequal land distribution with dispersed production

Although small and fragmented farms dominated agricultural production, land distribution was considerably unequal (Gao, 2005, p. 21; Lu, 1992, pp. 52-53; Lin, 1997, p. 34; Huang, 1990). The existence of a great variety of socio-economic groups in the Chinese countryside makes the formulation of simple and overarching class categorizations difficult⁸⁸ but it is nevertheless accurate to define landlords and small peasants as the two main classes in rural China before 1950. Gentry and non-gentry landlords owned a major part of the farmland. The majority of the peasantry was land-poor and depended on landlords for accessing land through various types of tenancy arrangements. During the Ming and Qing periods and even earlier times, there were big landowners cultivating their land by hiring labor. There was also a stronger tendency towards capitalist-style, managerial farming with wage labor in North China at least since the Ming period (Huang, 1985). However, this did not become a dominant form of production. Despite owning large tracts, most Chinese landlords refrained from cultivating most of their land by themselves and instead rented out their land to middle and small peasants in small quantities.

⁸⁸ Besides the small peasants, farm workers, and landlords, “there were in fact a great many other social groups out there—merchants, peddlers, artisans, clerics, and especially transport workers” (Rowe, 2009, pp. 109-110).

Surplus transfer from the peasants to the landlords

Rent was the largest source of landlord income until the revolution. Most landlords were also moneylenders, providing loans to other peasants and earning interest that, as we will see below, often reached usurious levels. Many landlords also had a stake in commerce. Similar to the experience of many other countries, a portion of the landlord class transformed itself into an urban bourgeoisie in the 19th and 20th centuries. However, this segment comprised a tiny minority of Chinese landlords. A large part of the ordinary peasants owned a small piece of land but had to rent in land owned by the landlords in order to carve out a living. Besides that, a significant portion of them had to sell their labor power for daily survival. Villagers were working in farms, factories, workshops, mines, transport sector etc. Apart from the small land-owning tenants, which consisted the majority of the Chinese peasantry by 1950, there were many landless people who were self-employed in non-farm activities, combining self-employment with agricultural wage labor or depending entirely on wage labor. Overall, a significant portion of the Chinese peasantry was semi-proletarian for over centuries but especially during the 19th and 20th centuries.

Table 45 quantifies the picture presented above. It shows that land distribution in China in the 1930s was highly unequal although not as unequal as the CCP leaders claimed.⁸⁹ While landlords comprised 4% of all rural households and owned 39% of all farmland, poor peasants comprising 60% of all households owned only 14% of farmland. In addition, landless households constituted 8% of all rural households.

⁸⁹ For example, Liu Shaoqi claimed that landlords and rich peasants constituted less than 10 percent of the rural population and owned 70 to 80 percent of the farmland in China before the revolution (Liu, 1959, p. 63).

Table 45. Land Distribution in Rural China in the 1930s

	Households (%)	Land (%)
Landlords	4	39
Rich peasants	6	17
Middle peasants	22	30
Poor peasants	60	14
Landless/full proletarians	8	0
Total	100	100

Source: Esherick, 1981, p. 405.

The share of the rented land within all cultivated land was estimated as 41.7% for the 1930s. Landlords owned about 85% of it. In other words, landlords rented out 35.4% (85% of 41.7%) of all farmland in China in the 1930s (Esherick, 1981, p. 401, 408). There was a clear North-South contrast in terms of the strength of rentier relations. Philip Huang (1990, p. 42) estimated the share of rented land as 18% of all cultivated area in North China Plain and 42% in the Yangzi Delta in the 1930s and 1940s. Tenancy rate was estimated as high as 95% for areas around Shanghai. In other words, land concentration and rental relations were stronger in the Yangzi Delta than North China Plain. In Guangdong, owner-cultivators constituted only 22% of the rural population, indicating the existence of a highly rentier economy (Lin, 1997, pp. 117-118). Different degrees of environmental stability underlined this regional variation. Land concentration and the share of rented land were higher in environmentally more stable regions.⁹⁰

⁹⁰ From the mid-19th century on, hydraulic infrastructure became much weaker in North China than the Yangzi Delta and South China, which made it more prone to damaging floods and crop failures. Since increasing environmental instability made farming more risky and less rewarding, landlords' chance of receiving high rents from peasants was limited in the north. This type of variation was also visible within individual provinces. For instance, landownership was more concentrated in the southern parts of the Yellow River-Grand Canal region, which had better irrigation and more crop output than its northern parts (Pomeranz, 1993, p. 278). Similarly, since the Han River Valley was environmentally very unstable due to the decline of hydraulic infrastructure in the 19th and 20th centuries, land concentration and the share of rented land in the valley regions remained lower than other parts of Hubei province (Zhang, 2014, pp. 130-154).

In many of the rentier arrangements, there was often more than one landlord (Myers & Wang, 2002, p. 563). For instance, in Sichuan, after acquiring permanent tenancy rights by paying a rent deposit to landlords, the rich tenants often turned themselves into rentiers by subletting their tenancy rights to poorer tenants (Perdue, 1987, pp. 160-161). Similarly, although lineage organizations in regions such as Guangdong accumulated a significant amount of land due to social norms and legal rules that prohibited its partition, lineages did not organize large-scale farming and instead rented out land to successful bidders, most of whom then re-rented it out to others in smaller quantities (Lin, 1997, p. 123). Finally, changes in state policies under the influence of class and social conflicts made a significant impact on land distribution and rentier relations. However, the proportion of rental payment to farm output never dropped below 30% in the Qing period (Gao, 2002, p. 22) and was about 40% in the Republican era (Lippit, 1974, p. 61), which shows that despite temporal variations, the tendency of unproductive landlordism remained considerable before 1950.

Usury was another important source of landlord income. The use of loans for productive purposes was very limited in rural China. Peasants required loans mainly for consumption purposes such as organizing the marriage of their children and funeral ceremonies of the deceased family members. The channels and degree of borrowing varied between different classes of the peasantry. Landlords were the last resort to borrow money due to high interest rates they charged. A person would ask a loan from a moneylender only when he had a pressing need which could not be met by modest amounts obtainable from friends and relatives (Bramall, 2009, p. 71). In regions having strong lineage organizations, peasants preferred to borrow from lineage funds due to their lower interest rates than the credit market (Duara, 1988, p. 98). Moneylenders did not see very poor

peasants as qualified loan recipients. Hence, their borrowers usually belonged to the lower-middle and middle peasantry (Lippit, 1974, p. 69). While many of the credit relationships involved only individuals, as moneylending with interest increasingly became a profitable business in the Qing and the Republican periods, pawnshops located in towns, county seats, and cities began to provide a substantial part of the total rural credit (Duara, 1988, p. 19, 271). Although moneylending was forbidden for the gentry, both gentry and non-gentry landlords invested in these credit institutions (Rowe, 2009, p. 112). As we will see below in more detail, although state policies reduced it temporarily in the 18th century, usury remained to be a major mechanism of surplus transfer from small peasants to the landed elite and put a major obstacle to rural economic development in the 19th and first half of the 20th century.

Finally, peasants' tax payments constituted another major source of income for the landlords. One of the general characteristics of rural China before 1949 was that the state did not directly control the administrative units below the county level. Regardless of their differences of capacity, no administration before the PRC was able to govern the villages directly. Hence, "below the level of official apparatus, landlords were indispensable intermediaries in the state's dealings with the peasants" (Huang, 1985, p. 247). While the gentry (which generally comprised the wealthiest landlords) constituted the local officialdom at the county level, it also had to rely on smaller landlords at the village level.⁹¹ Since the central state did not have the fiscal means to finance the county administration

⁹¹ The ancient *baojia* system was an important component of village governance for a long time. It organized households in hierarchical groups that are responsible for a variety of tasks including population registry, reporting crime, and conflict resolution. Non-gentry village leaders, especially the village headmen, assumed the primary responsibility for the proper working of this system. The Qing state took steps to revive this ancient system. Hence, the gentry connected with the village headmen to govern the countryside during the Qing era (Rowe, 2009, pp. 52-55).

adequately, it allowed the gentry to retain a portion of the local taxes to finance it. It also allowed the gentry to retain a considerable part of the taxes as remuneration for their administrative services. More importantly, as the gap between the financial requirements of the state and its capacity of tax collection widened up over time, the state transferred its taxation authority to the gentry in more explicit terms. The system of tax farming, which led the gentry to purchase the right to collect taxes in a specific region by paying the central government a fixed amount of tax, became increasingly common over time (Duara, 1988, pp. 236-237; Myers & Wang 2002, p. 596; Pomeranz, 1993, pp. 107-108). Hence, by collecting taxes more than it paid to the central government, the gentry created a significant source of income for itself. To be sure, many of the local elites refrained from forcing the people to pay high taxes and used the collected taxes for public welfare. Nevertheless, the system of tax farming had a built-in tendency toward predatory behavior. Hence, the problem of taxation led to never-ending political debates, social conflicts, and administrative reforms in prerevolutionary China. Similar to rent and interest, tax burden of the peasantry decreased during the 18th century and rose to unbearable proportions in the 19th and 20th centuries.

Rentier landlordism

Capitalist farming with wage labor did not develop much in China for several reasons. Firstly, many of the successful entrepreneurial families operating large farms by hiring labor became middle and small peasants within the life span of a few generations due to the institution of partible inheritance. Secondly, the “rent barrier” on capitalist farming (Patnaik, 1986, 1988, 1997) was strong in China. Rent barrier refers to a situation in which the landlord class is not convinced that large capitalist farming can bring

considerably higher returns than rentier activities. Since switching to capitalist farming requires significant investment to agriculture and requires close supervision of the farm workers, which are demanding and costly tasks, if a landlord does not expect sufficiently higher returns from capitalist farming, he will not bother himself with leaving the comfort of his rentier position to become a capitalist. This was clearly the case in China in the pre-1950 period (Huang, 1990, p. 71). If a landlord family managed to raise a male heir who passed official examinations and became a part of the gentry, not only could the family consolidate and probably expand its income from rent and usury but also add a significant extra income derived from its increased authority over rural taxation. In fact, in the 19th century while a small landlord owning 100 *mu* of land could earn 100 taels annually, the average annual income of provincial governors and county magistrates was 180,000 taels and 30,000 taels, respectively. Hence, non-farm pursuits seemed far more tempting to the rural rich (Huang, 1985, p. 247). The families which managed to withstand the downward pressure of partible inheritance were generally less successful in resisting this temptation. Hence, it was possible to recognize a visible generational shift from successful managerial farming to landlordism (Huang, 1985, p. 179; Huang, 1990, pp. 71-72). More interestingly, many of the urban entrepreneurial families also switched from capitalist production back to unproductive landlordism in the 18th and 19th centuries (Hung, 2008, p. 576). Although the tendency of unproductive landlordism applied to all types of landlords, increasing tendency towards absentee landlordism in both the North (Duara, 1988, p. 207; Huang, 1990, p. 35) and South China (Huang, 1990, p. 35, 42; Rowe, 2009, p. 97) at least since the late Ming period made it more recognizable. Landlords increasingly relied on

intermediaries in finding tenants and collecting rents and many of them did not have any idea about the location of their farms and identity of their tenants (Rowe, 2009, p. 97).⁹²

In brief, in addition to population pressure and decreasing scale of production, unproductive landlordism created a major obstacle to rural economic development in prerevolutionary China. Although the state managed to minimize this problem during much of the 18th century, it became a major problem again in the late 18th century and remained so until 1950.

Agricultural Revolutions in Chinese History and the 18th Century Pinnacle

Great advances in science and technology as well as managerial innovations have brought increasingly efficient use of capital and labor in the age of capitalism.⁹³ However, this does not mean that humanity was living in a state of absolute stagnation before that. Pre-capitalist societies also underwent periods of economic dynamism. This is an especially important point for understanding the Chinese history since China was among the most advanced economies of the world until 1800 (Arrighi, 2007; Frank, 1998; Pomeranz, 2000). Since China was a largely agrarian country where the great majority of the population was living in the countryside,⁹⁴ economic revolutions that took place in the Chinese countryside is worthy of brief analysis here.

Agricultural development before the 18th century

⁹² Although absentee landlordism increased the autonomy of the tenants in crop selection and other managerial decisions, “the benefits to tenants of this relative freedom may have been largely offset by the impact of population growth, however, which once again raised the value of land relative to labor and consequently drove rents ever higher” (Rowe, 2009, p. 97).

⁹³ This does not mean that capitalism has been generally beneficial to humanity. Inequality within and between nations, devastating wars, and environmental degradation have been the inherent characteristics of the capitalist world system since its beginning.

⁹⁴ 94% of China’s population lived in the countryside by the 1780s (Myers & Wang, 2002, p. 642) and agriculture comprised 68.5% of its GDP as late as 1890 (Maddison, 2007, p. 54).

Several major advances in agricultural technology and infrastructure were made in China over two millennia. Iron farming tools were spread in the Wei and Yellow River valleys of North China during the Warring States (404-201 B.C.), Qin (221-226 B.C.), and Han (206 B.C.-220 AD) periods. Different dynasties, especially the Han dynasty, developed the hydraulic infrastructure on the Yellow River and other parts of North China. These technological and infrastructural developments led to the first agricultural revolution in China (Greer, 1979, pp. 24-31; Huang, 1990, pp. 77-78; Marks, 2011, p. 5). More advances were made in the following periods. The Grand Canal, whose construction dated back to the 5th century B.C., was completed during the Sui dynasty period (581-618 AD).⁹⁵ The spread of Champa and other early-ripening varieties of rice and the construction of hydraulic facilities during the Tang (618-907), Five Dynasties (907-908), and the Song (960-1279) periods resulted in a second agricultural revolution primarily in the regions across the Yangzi River. Both land and labor productivity seems to increase as a result of these major technological advances (Ho, 1959, pp. 169-73; Huang, 1990, pp. 77-78). As a result of these developments, multiple-cropping index rose from 0.6 in the Han period to 0.8 in the Tang and 1 in the Song period. The practice of fallowing ceased to exist in the Song era, a remarkable success that Europe achieved 800 years later (Maddison, 2007, pp. 32-35). The Ming dynasty period (1368-1644) witnessed a comprehensive advance in farming. Agricultural tools were improved, double cropping of rice became more common, and the New World crops were disseminated all over the country.⁹⁶

⁹⁵ Although the Grand Canal did not directly contribute agricultural production (its main focus was transporting grain from the lower Yangzi region to the capital, Beijing), its existence itself was a witness of the capacity of the Yangzi Delta and South China to produce enough surplus grain to feed deficit regions.

⁹⁶ Double cropping of rice spread in central, southern, and southwestern regions in the second half of the 16th century. Two provinces of central China, Hubei and Hunan became major exporters of rice in the Ming period. A famous proverb, first recorded in 1528, reflected this development: “When Huguang [Hubei and Hunan] has a good harvest, the empire has sufficient grain” (Perdue, 1987, p. 64). Another important

Ming-Qing transition

Chinese peasantry has probably been the most rebellious peasantry of the world history. Peasant rebellions played a big role in the rise and demise of different dynasties over centuries and the last Chinese dynasty, the Qing, was founded after a series of peasant wars against the Ming dynasty. The Ming state carried out land reforms during its early period, which improved the position of the ordinary peasants. However, land concentration rose again and became an important source of rural unrest in the late 16th and early 17th centuries (Rowe, 2009, pp. 96-97). Environmental degradation, the decline of hydraulic infrastructure, and the ensuing agrarian crisis also contributed to its growth. Finally, the oppression of the sub-commoner groups gave rural unrest an especially explosive character.⁹⁷ These factors prepared the background of the peasant rebellions of the late 16th and the 17th century that led to the collapse of the Ming dynasty and brought the Qing dynasty to power in 1644. As a result of these wars, Chinese population declined by one-third between 1600 and 1650 (Ho, 1959, p. 281).⁹⁸ This was the only major interruption within China's otherwise continuous demographic expansion in the last five hundred years.

development of the period was the spread of dryland crops such as wheat, millet, and legumes to the south of the Yangzi River. Besides increasing the total output, since they could be harvested before the season of heavy rain, dryland crops provided the producers an insurance against possible crop failures due to floods. Although the previous administrations were also aware of this fact and took initial steps towards this direction, the Ming state expedited the spread of dryland crops to the south. Probably the most significant agricultural development of the period was the entry of New World crops such as maize, sweet potatoes, and peanuts into China through the coastal regions and the India-Burma-Yunnan route. These crops' ability to grow on poor-quality soil, resistance to drought, and high nutritious value made them very popular in the empire and enabled the expansion of farming toward hilly regions (Ho, 1959, pp. 169-92). Finally, cotton and textile production increased significantly in the Yangzi Delta and North China in the 16th and 17th centuries (Pomeranz, 2000, p. 87).

⁹⁷ Bondservant tenants constituted a group that was harshly exploited by the landlords in household services as well as productive activities especially during the late Ming period. Other types of discriminated people also existed, including the so-called "mean people" (*jianmin*). Moreover, many artisan groups (*jiangji* or *jianghu*) were laboring under caste-like, hereditary occupational constraints. Harsh exploitation, social discrimination, and poor living conditions radicalized these groups against the Ming state (Zhan, 2013, p. 55).

⁹⁸ In his study on the North China Plain, Philip Huang cites figures (which he finds of "questionable utility") showing a population decline of 25% in Hebei and 63% in Shandong between 1578 and 1685 (Huang, 1985,

Rural economic development in the 18th century

Pre-1950 rural China reached its highest level of economic development and administrative efficiency under the Qing dynasty in the first three quarters of the 18th century. Relatively higher state capacity was one of the central factors behind this outcome. An important indication of the high state capacity was the doubling of the size of the empire and maintaining internal order with a relatively small and inexpensive army having less than one million soldiers (Rowe, 2009, p. 32). Of course, regardless of the quality of its personnel, a small and inexpensive military could succeed only in a favorable geopolitical environment. After 1683, the Qing dynasty entered a period of uninterrupted peace that lasted more than a century, which enabled the state to keep the agricultural tax low and leave commerce largely untaxed (Myers & Wang, 2002, p. 641; Perdue, 1987, p. 76). However, as the rising colonial powers of the West started to pose a formidable military challenge to China since the late 1830s, small and inexpensive army turned into a fundamental reason of the decline of the Qing.

A similar case can be made for the formal state apparatus in the countryside. No state before the PRC was capable of penetrating the sub-county level directly. Although the average county population reached 300,000 in the 19th century (Duara, 1988, p. 46; Fairbank and Goldman, 1992, p. 106; Huang, 1996, p. 180), as a result of the small budgets of the county administrations that is closely related to the low tax policy of the Qing, the county administration remained extremely understaffed⁹⁹ and highly dependent on a large

p. 322). Peter Perdue noted that the *ding* tax quota, which was assessed based on male population, declined by 37.5% in Hunan (Perdue, 1987, p. 67). Robert Marks estimated the population decline in Lingnan region (Guangdong and Guangxi) as 20% between 1640 and 1661 (Marks, 2004, p. 158).

⁹⁹ The number of officially appointed clerks assisting the magistrate in each county remained less than twenty (Zhan, 2013, pp. 88-89).

number of intermediaries to govern the countryside. In order to pay these intermediaries, the state had to share with them a part of its tax authority and income through various deals made at “the margins of legality” (Rowe, 2009, pp. 52-53).¹⁰⁰ Furthermore, since the local officialdom comprised (almost entirely) of wealthy landlords and the practice of purchasing official degrees continued without much interruption (Rowe, 2009, pp. 38, 113-114; Zhan, 2013, p. 88), the autonomy and capability of the local state were not absolute or guaranteed. These factors point out to the significant limitations of rural governance even in the 18th century.

Within these constraints, however, it is evident that the Qing rural administration achieved a high level of effectiveness in terms of the global administrative standards of the 18th century.¹⁰¹ What seems critical behind the rural economic success of the 18th century

¹⁰⁰ “The Qing state had yet to institute an effective county-level administration system, and the absence of such a system had limited its governing capacity and policy implementation” (Zhan, 2013, p. 87).

¹⁰¹ There were three main pillars of this success. Firstly, the state used the Neo-Confucian ideology as effectively as possible to maintain social order. Secondly, it skillfully used the self-regulatory groups such as kinship organizations, merchant and artisan guilds, and water conservancy communities. By pushing for the revival of the ancient *baojia* system, the Qing state received the assistance of the village communities (under the leadership of village headmen) in crucial areas such as population registry and reporting crime (Rowe, 2009, pp. 32-33, 53-54). Finally, especially during the reigns of the Yongzheng and Qianlong emperors, the court carefully selected the most capable officials for provincial and sub-provincial posts and forced them to go deep into the grassroots level. While the officials’ contact with the grassroots level and the *baojia* system shortened the distance between the state and the villages to a certain extent, different types of memorials tightened up the links between the provincial governments and the court (Myers & Wang, 2002, p. 599; Rowe, 2009, pp. 41-42; Zhan, 2013, pp. 69-70). As a result, the 18th century Qing state acquired a relatively high capacity. The good performance of the public granary system is a typical example of it (Rowe, 2009, pp. 56-57; Zhan, 2013, p. 71).

is that the Qing state used its power to reduce rigid status hierarchies,¹⁰² distribute land,¹⁰³ and reduce the rates of rents, loan interests, and taxes.¹⁰⁴ These policies helped to curb the

¹⁰² There were a few reasons behind the Qing rulers' interest in improving the position of the lower classes in the countryside. Firstly, they learned the lesson from the social upheavals that undermined the power of the Ming dynasty that improving the conditions of the lower classes was crucial to consolidate and prolong their rule (Zhan, 2013, pp. 65-66). Secondly, although the Qing state did not intend to challenge the bases of the landlords' economic power fundamentally, it intended to limit their economic power to prevent its transformation into regional fiefdoms that might threaten the power of the central government (Huang, 1985, p. 247), as widely observed in the European feudalism. As a result, like the other Chinese dynasties before it and unlike the late Ming period, the Qing state aimed to strengthen the basis of small peasant economy and improve the conditions of the lower classes in rural areas. Unsurprisingly, after consolidating its power, the Qing state implemented a series of reforms that prohibited bonded labor and physical abuse of the tenants and strengthened the contractual character of the relations between landlords and tenants and hired laborers. These reforms also included the prohibition of social discrimination and removal of hereditary occupational constraints (Myers & Wang, 2002, pp. 593-594; Rowe, 2009, p. 68; Zhan, 2013, p. 79).

¹⁰³ Although the fundamental characteristics of landlordism were not challenged, land and rent relations were modified in a more egalitarian manner in the 18th century. Peasant wars of the Ming-Qing transition played a key role in this process. In fact, "the victories of the late Ming peasant uprisings ensured that small-scale, peasant-based management forms would exert a powerful influence on the trajectory of change in the Qing" (Walker, 1999, p. 69). To be sure, as people of Manchu origin, the Qing rulers felt the need to compromise the Han elite by recognizing their control over land. The Qing also rewarded its supporters by granting them large tracts of land. Hence, a process of "land enclosure" (*quandi*) took place during the early Qing era (Huang, 1985, p. 247). However, this enclosure did not reverse much the previous gains of the smallholders. Manchu landlords sold most of their land to the peasants before the mid-18th century (Myers & Wang, 2002, p. 612). Many landlords who fled the countryside during the peasant wars did not dare to return back to reclaim their land. Finally, by reducing the population pressure on land considerably, the great death toll of the peasant wars of the Ming-Qing transition made the tenants more assertive and made the labor-hungry landlords less resistant to tenants' demands (Rowe, 2009, pp. 96-97). The Qing state's concern to prevent the emergence of regional fiefdoms and some top officials' genuine belief in the viability of smallholder production also played key roles in the process. The administration expanded the rights of the tenants by granting them the right to negotiate the terms of their rental contracts and claim permanent tenancy on the lands that they work continuously for a long time (Zhan, 2013, pp. 58, 73-75). An important reality of the rent relations in pre-1949 China (that has not received enough scholarly attention until recent years) is that the actual rent payments were usually considerably less than the official rent stated in the rental contracts. From the Song period onwards increasing population pressure on land continuously forced the Chinese peasantry to resist high rents through a combination of everyday forms of resistance and open revolts and rebellions (Gao, 2002, p. 22; 2005, pp. 19-23). Besides putting periodic checks on rent rates, those struggles enabled the tenants to pay less than the official amount of rent stated in rental contracts. In addition to the reduction of official rent rates, the actual rent rates also decreased during the 18th century. While tenants were actually paying 80-90% of the rental amount stated in their contracts in the late Ming period, they paid 70-80% of it in the early 18th century, which was further declined to 60-70% in second half of the 18th century. The rent rate (the proportion of rent—either in cash or in kind—to farm output) decreased from about 60% in the late 16th and early 17th century to 30-40% in the 18th century (Gao, 2002, p. 22). Despite the importance of these periodic differences, however, it is obvious that even the lowest estimate (for the 18th century, which is 30%) indicates a significant amount of surplus transfer in the form of rent from the peasants to landlords. Another important development of the 18th century was the spread of fixed rents (paid in cash or in kind). Landlords were previously involved in the productive process by supplying seeds and animals to their tenants. This involvement was brought to an end with the increasing dominance of the fixed rent. Cash nexus replaced the ties of personal dependency between the landlord and the tenant. Thereafter, tenants became increasingly unable to benefit from the support of the landlords in times of hardship but they were now able to keep the surplus that remained after the payment of the fixed rent. This increased the amount of investable surplus in the hands of the peasants and made a positive impact on production (Perdue, 1987, pp. 155-156).

excesses of unproductive landlordism and therefore left a larger part of the agricultural surplus to small producers and incentivized the small peasantry to invest more capital into farm and handicraft production than the earlier periods and prepared the foundations of a dynamic growth process.

Development of rural infrastructure in the 18th century

As I have pointed out in the Introduction, especially in large and populous countries like China and India, successful economic development requires a geographically and socially broad-based strategy that incorporates a large number of regions and people.¹⁰⁵ What seems as a key factor behind rural China's economic success in the 18th century is the state's deliberate effort to expand the geographical scope of economic development by developing infrastructure in regions of frontier character. These regions included not only the areas that are usually referred in the literature as the "frontier regions" (that previously

¹⁰⁴ Agrarian taxes comprised more than two thirds of the taxes collected in China in the 18th century (Zhan, 2013, p. 65). Hence, tax contribution of the agricultural sector was critically important for the effective performance of the state machinery. Despite this importance of agricultural taxation, in order to meet the standards of "benevolent government" (whose absence triggered the revolts that brought an end to the Ming rule) and increase the productive enthusiasm of the peasantry, the Qing state refrained from raising agricultural taxes. The tax policy of the Qing had two main features. First, it aimed to relieve the tax burden on the smallholders. Before the 1720s, the land tax was assessed based on two main criteria, combining a head tax based on the number of adult males in the households and a land tax determined by the estimated output of the household's cultivated fields. Hence, the presence of the head tax required even the land-poor peasants to pay tax. In the 1720s, the Yongzheng emperor decided to merge the head tax with taxes based on land property. By tying taxation to landownership, the reform of the 1720s greatly relieved the tax burden of the land-poor peasants and shifted it to landowning classes in a progressive manner. On the other hand, we should also point out to the pitfalls of the Qing's tax policy. Although the tax burden was shifted from the shoulders of the poor to the wealthier sections, rich peasants and landlords also remained undertaxed (Rowe, 2009, p. 43). Tax rates in Europe were much higher than China at that time (Zhan, 2013, pp. 76-77). Small and inexpensive government was the logical corollary of this lax tax policy. As I have already mentioned, this administrative structure could work well only within a favorable geopolitical environment like the one during the 18th century. Following the dramatic transformation of the geopolitical environment in the 19th century, the Qing policy of low taxation-small government began to unravel and undermine the achievements of the previous century.

¹⁰⁵ To be sure, the history of economic development demonstrates that most (and in many national cases, all) of such regions can develop but cannot reach the level of the advanced/core regions. However, regional inequality is a problem that is entirely different from the problem of the lack of economic development. What makes a big positive difference for the national economic performance of a large and populous country is *not* whether there is any catching-up between the poor and rich regions, but whether the poor regions gain economic dynamism and become richer than before.

lied outside the borders of the “China Proper” and later on incorporated into it through conquest and state-making) but also the ones that are located within the China Proper but had not yet fully joined the economic development process. By incorporating and developing them, the Qing state enabled rural China to reach an upper boundary/frontier of economic development. The impressive development of China’s rural economy during the 18th century was primarily based on the extension and intensification of the use of the basic means and inputs of farm production including land, water, farm tools, seeds, and fertilizers. We will visit the last three items later, in our discussion of agricultural intensification. Here I will focus on land and water, the main components of agricultural infrastructure.

The Qing rulers aimed for a quick recovery of agriculture, which was devastated during the wars of the Ming-Qing transition. By doing this, they aimed to bring social stability as well as more tax income to the new throne. Hence, along with population settlement in depopulated areas such as Sichuan, the new administration viewed land reclamation and hydraulic construction as immediate priorities. Officials encouraged both landowners and smallholders to carry out these tasks by granting them tax exemptions, credit, and other kinds of institutional support. As a result, population, production, and trade quickly recovered.

Starting with the 1720s, the imperial administration recognized the fact that population was increasing too rapidly and straining all natural resources including land and water. However, since population growth was seen as a manifestation of good governance and military strength within the “Malthusian growth regime” of the pre-capitalist world (Popov, 2014, pp. 25, 87-89), population planning was not conceived as a policy option

(Rowe, 2009, p. 44). Hence, instead of checking the population growth, the Qing administration focused its efforts on increasing the supply of land through reclamation campaigns (Marks, 2004, p. 278). The Yongzheng emperor expressed this policy logic in precise terms: “Population has increased of late, so how can [the people] obtain their livelihood? Land reclamation [*kaiken*] is the only solution” (Marks, 2004, p. 291). Expansion of the hydraulic infrastructure was a necessary corollary of land reclamation and therefore was taken seriously during much of the 18th century.¹⁰⁶

For much of the imperial history, North China had been the most strategic region for Chinese administrations since Beijing, which served as the imperial capital for a very long time, is located there. On the other hand, due to its dry climate and low rainfall, land productivity had always been much lower in the north than the south.¹⁰⁷ Hence, the northern provinces were not seen as reliable sources of food supply to Beijing. The construction of the Grand Canal on the Yellow River almost a millennia before the Qing period, whose primary goal was supplying food from the Yangzi Delta and South China to

¹⁰⁶ In Chapter 3, we have seen that in striking similarity to the Qing administration of the 18th century, the PRC in the Mao era did not control population growth and instead focused its efforts on developing agricultural infrastructure through mass labor mobilization. While Chinese population tripled within 266 years of Qing rule, it doubled between 1950 and 1980. Two periods are also remarkably similar in terms of the development of agricultural infrastructure and the accompanying intensification of crop production. The only difference between them is that the pace of progress was much faster in the Mao era than the Qing era due to the greater mobilization capacity of the state and the accessibility of higher technology.

¹⁰⁷ Philip Huang summarizes the ecological and productive differences between the mainly wheat-growing North China Plain and mainly paddy rice-growing Central and South China: “Growing season is quite unlike that in the wet rice areas. The frost-free period ranges from only six months a year in northeastern Hebei to seven and a half months in northwest Shandong. This puts great pressure on the double-cropper, who must harvest his spring crop and plant his winter wheat within the space of about six weeks, before the frost sets in. The abbreviated growing season, together with other problems – lack of irrigation, lack of fertilizer, and alkaline soil- has severely limited the possibilities of land use over the winter months...Longer growing seasons permitted frequent cropping in the rice regions than in the Hebei-northwest Shandong plain. Rice growing, moreover, gives a higher yield per crop...A conjunction of low-yield, disaster-prone dry farming with huge population density...laid the basis for severe scarcity in this area throughout much of imperial history” (Huang, 1985, p. 58, 65). The North-South divide should be kept in mind when discussing rural development efforts and outcomes of the Chinese state both before and after 1949. Many of the infrastructural projects of the collective era were concentrated on North China in order to minimize its unfavorable ecology’s adverse impact on land productivity.

Beijing, was therefore a clear manifestation of the strategic importance of the north as well as its problem of producing enough agricultural surplus. The giant scale of the Grand Canal and the dikes on the Yellow River (which protected large areas in North China from floods) required greater supervision and funding from the central government. In fact, through successive dynasties including the Qing, the central government involvement in hydraulic works remained far greater in North China than other parts of the empire (Huang, 1985, pp. 56-57; 1990, p. 40; Marks, 2011, p. 6; Will, 1985, p. 317; Zhang, 2014, p. 47). During much of the 18th century the Qing state retained the emphasis on the maintenance of the Grand Canal by investing significant funds as well as mobilizing both the state apparatus, local elite, and peasants for its maintenance (the latter provided great amount of corvée labor, which was a labor tax levied on the rural households). However, the Qing administration did not restrict itself with this. It increased the land frontier in the North. Some of the biggest infrastructure projects were carried out in Hebei and Shandong provinces. For example, under the direct supervision of Prince Yinxiang, the brother of the Yongzheng emperor, the local bureaucracy encouraged the peasants to cultivate rice by granting them tax exemptions. Criminal sentences of the wealthy people were commuted in return to their financial contributions to these projects. As a result, about 600,000 mu of land in Hebei was opened to irrigated rice farming (Marks, 2004, p. 296).

The Yangzi Delta, which is also called as the Jiangnan area, was the most advanced region of China during the last millennium, it still had many agriculturally backward areas having significant development potential at the beginning of the Qing period (Li, 1998, pp. 3-7). Some of the most successful agricultural developments of the 18th century took place in these regions. For instance, in the Ninghzen hills, where only a few irrigation facilities

existed and agriculture depended heavily on rainfall, the state and the elites mobilized the peasants to construct reservoirs and ponds to store rainwater, which dramatically increased the production of rice and winter crops and developed fishing (Li, 1998, pp. 64-65).

The region between the middle reaches of the Yangzi River and the Han River is called the Jiangnan Plain. It is located in Hubei province of Central China. Many war refugees, merchants, artisans, and retired officials were settled in this region in the early Qing period because it had a large amount of reclaimable wasteland. Tax exemptions were granted to new settlers to encourage land reclamation. New settlers continuously reclaimed land from the riverbeds, lakefronts, and mountains and dug numerous small and medium-sized dikes to protect them from flooding. Unlike North China, the state did not provide large funds to hydraulic works besides relief funds provided in times of natural disaster. Both peasants and local elite contributed with funds to dike works. Supervision of the dikes to prevent their breakup was a major preoccupation of the local administration.¹⁰⁸ As we will see below in more detail, land reclamation played a key role in the hydraulic decline but the coordination between the local officials, elites, and the peasants was strong enough to maintain the dikes during much of the 18th century. These massive efforts transformed the Jiangnan Plain into a major producer of rice and cotton (Zhang, 2014, pp. 35-37, 48-49, 216). Although it did not become an advanced region like the Yangzi and Pearl River deltas, the Jiangnan Plain made a significant contribution to the China's rural economic success in the 18th century.

¹⁰⁸ An official of the early Qing period advised the county magistrates in the Han River Valley to devote 60-70% of their time to dike affairs. Punishment and promotion of the local officials depended highly on their performance in supervising dike maintenance (Zhang, 2014, pp. 48-51).

The Lingnan region (comprising Guangdong and Guangxi provinces of South China) developed along similar lines. Like today, Guangdong was an advanced province and Guangxi was a less developed province during the Qing era. Although much of its land was under cultivation, efforts to expand farming led to a 75% increase in cultivated land. The construction of irrigation and drainage facilities on the Pearl River Delta after 1735, which was primarily based on the mobilization of unpaid labor of the masses and financial resources of the local elite, helped to decrease the risk of flooding of mulberry fields and assisted the sericulture industry (Myers & Wang, 2002, pp. 634-635). Besides this hydraulic expansion in the core, most of the irrigation expansion happened in the peripheral areas of the province.¹⁰⁹ The scope for capital construction was even greater in Guangxi. As a result of a rigorous effort in which the elites, lineages, and the state contributed with funds and peasant masses contributed with their (mostly *corvée*) labor, the total cultivated area in Guangxi quadrupled between 1673 and 1853 and the share of irrigated acreage increased (Marks, 2004: 282, 307, 315-318).¹¹⁰

Although total cultivated area increased greatly, the proportion of irrigated area remained at about 30% by the early 19th century, reflecting the remarkable hydraulic achievement of the 18th century Qing state (Maddison, 2007, p. 34).

The development of human capital

In addition to constructing a strong rural infrastructure, the Qing state also improved the human capital significantly. This involved the development of formal

¹⁰⁹ For instance, in Nanxiong prefecture, a hilly and less advanced region, the number of water reservoirs increased from 24 in 1733 to 73 in 1822. In Lianzhou prefecture, a similar type of region, the number of reservoirs increased from 36 to 71 during the same period (Marks, 2004, p. 315).

¹¹⁰ There were very few irrigation facilities in the province before the 18th century. For instance, in 1733 Lingui county had only 3 irrigation facilities and Xuanhua and Yishan counties had 2 facilities each. As a result of the mobilizations of the 18th century, by 1801 the number of irrigation facilities reached to 26 in Lingui, 25 in Xuanhua, and 11 in Yishan (Marks, 2004, p. 315).

education as well as the informal education that was oriented to improve the productive skills of the rural population.¹¹¹ Since provincial governors were required to work in different provinces during their careers, they were able to introduce new crops and better farming practices that they learned and developed during their previous posts. They often brought knowledgeable farmers to the targeted areas in order to educate the peasants about new crops and techniques like deep plowing, fertilization, and multiple cropping. Education played a vital role in developing agricultural production in less developed regions in the 18th century.¹¹² Rural handicrafts also developed as a result of a rigorous effort to expand the knowledge of better spinning and weaving techniques in less developed regions.¹¹³ In advanced areas like the Yangzi Delta, the increase in formal education helped to develop the necessary managerial skills that helped to take the industrial production one step further (Zhan, 2013, pp. 83-85).

¹¹¹ On the Qing state's decent performance in developing formal education and increasing the literacy rate in the 18th century, see Zhan, 2013, p. 86.

¹¹² For instance, cotton production, which was previously confined to the Yangzi Delta and a few northern provinces, were spread to Gansu, Guizhou, Shaanxi, and Sichuan in the 18th century. Similarly, the production of high yielding sweet potatoes, which was previously confined to Fujian and Guangdong, was extended to northern and western provinces (Zhan, 2013, pp. 83-84). As part of the effort to spread multiple cropping, wheat was introduced in northern Guangxi as a second harvest crop through a training program. An official report in 1735 stated: "Last winter officials in Pingle and Zhaoping counties gave out wheat seed and taught the people how to plant it. Now they are reporting a plentiful harvest. Rice-growing villages now also have spring wheat to see them through the time between [rice] harvests." A similar kind of training program was carried out in less developed, hilly regions of Guangdong. The program was devised under the close attention of the Yongzheng emperor who stated in a 1734 edict that "the Cantonese only know how to work irrigated land, but not dry land. The land in Gaozhou, Leizhou, Lianzhoufu, and Qiongzhou prefectures is higher and suitable for vegetables and wheat. Settlers [there] are not knowledgeable about dry-land farming and do not have the right tools for the job." He then ordered the officials of Shandong and Henan "to select 20 farmers and send them to Guangdong to instruct the settlers" (Marks, 2004, p. 282, 299).

¹¹³ Provincial governors and county magistrates mobilized the specialists and knowledgeable artisans to teach the peasant women spinning and weaving. During his service in ten different provinces, Chen Hongmou prioritized the spread of handicraft skills among women (Rowe, 2001, pp. 231-233). For instance, during his service in Zunyi prefecture of Guangxi, the magistrate Chen Yudian spread the knowledge of raising silkworms from his native province, Shandong to Zunyi, which transformed the latter into a relatively wealthier area (Zhan, 2013, pp. 83-85).

Rural economic development in the 18th century

As a result of the internal stability, favorable geopolitical environment, remarkable development of the hydraulic agriculture, the increase in the investable funds in the hands of the smallholders, and the development of the farming skills of the population in advanced and less advanced, agricultural production was intensified greatly in the 18th century, which was clearly reflected by the rise of the cropping index and increasing efficiency of the use of agricultural inputs.¹¹⁴

As Table 46 demonstrates, land productivity increased from 1095 kilograms per hectare in 1650 (the beginning of the Qing era) to 1840 kilograms per hectare in 1820. The figure for 1952 (1879 kilograms per hectare) is not very different from this level, showing that the 18th century represents the peakpoint of land productivity in prerevolutionary China and was followed by stagnation for about 150 years. Rural industries also achieved a peakpoint in the 18th century. In the Yangzi Delta, silk production increased from 42,000 to 90,000 piculs and cotton cloth production increased from 50 million to 100 million bolts between the early 17th century and mid-19th century (Li, 1998, p. 33, 107). In this period, “China had a balance of trade surplus with everyone else, based on its unrivaled manufacturing production and export of silks, porcelain, and other ceramics” (Frank, 1998,

¹¹⁴ Cropping index increased from 1 in the Song period to 1.4 in the early 19th century (Maddison, 2007, p. 36). For detailed information on the “fertilizer revolution” and agricultural intensification in the Yangzi Delta in the 18th century, see Li, 1998, pp. 57-115. Qing China’s remarkable success in intensifying agricultural production was noted with appreciation by the Western observers of the time. For instance, Pierre Poivre, a French agronomist who visited Guangdong in the 1720s, wrote: “Do the Chinese possess any secret arts of multiplying grain and provisions necessary for the nourishment of mankind? I...observe that their secret consists simply in manuring the fields judiciously, ploughing them to a considerable depth, sowing them in the proper season, turning to advantage every inch of ground which can produce the most considerable crop, and preferring to every other species of culture that of grain, as by far the most important...That which must render this plan of agriculture the more inconceivable to Europeans, is the idea of their never allowing their lands to lie one season fallow...[the land thus] yield[s] annually two crops, and in those towards the south often five in two years, without one single season fallow” (Marks, 2004, p. 285).

p. 116). China's share in world GDP increased from 22.3% in 1700 to 32.9% in 1820 (Maddison, 2007, p. 102).

Table 46. Grain Production in China (1400-1952)

	Population (millions)	Grain Output (thousand tons)	Cultivated Area (million ha.)		Grain Yield kg/ha.
			Grains	Total	
1400	72	20 520	19.8	24.7	1 038
1650	123	35 055	32	40	1 095
1750	260	74 100	48	60	1 544
1820	381	108 585	59	73.7	1 840
1952	569	162 139	86.3	107.9	1 879

Source. Maddison, 2007, p. 37.

On the other hand, we can also identify the roots of the decline of China's rural economy within this bright picture. As Table 46 shows, Chinese population more than trebled between 1650 and 1820. Since the growth of total grain output was not faster than population growth, per capita grain output stagnated. Scholars have been debating whether labor productivity increased or decreased in the Yangzi Delta in the 18th century (Brenner & Isett, 2002, p. 625; Huang, 1990; Li, 1998, pp. 140-141). Nevertheless, population figures on Table 46 and the existing literature¹¹⁵ suggest that labor productivity in agriculture did not increase in China *as a whole* in the 18th century. Rather than the result of inefficiency of the peasants in using inputs, the reality was clearly the opposite, this was an unavoidable consequence of the extremely pro-natal population policy of the Qing emperors, which led to rapid population growth that in turn ate up the land productivity increases that were achieved through a huge development effort. Moreover, since the daily

¹¹⁵ While Brenner & Isett (2002, p. 625) argue that labor productivity in agriculture was halved between 1700 and 1800, Myers & Wang (2002, p. 637) suggest that it remained constant.

return to spinning and weaving was higher than the daily return of a landless farm worker (Li, 1998, pp. 149-150; Pomeranz, 2000, pp. 101-102, 316-322) but lower than the daily return to rice and wheat cultivation in household farms (Brenner & Isett, 2002, pp. 631, 652-653; Li, 1998, pp. 82-86, 148-150), Chinese rural households' increasing shift to handicrafts failed to compensate their loss of agricultural income due to stagnating labor productivity. In short, the warning signals of the coming decline of the rural economy were present within this generally bright picture of the 18th century.

The Decline of China's Rural Economy (1800-1950)

This section aims to point out to the fundamental reasons of the decline of China's rural economy between 1800 and 1950, which include environmental degradation, hydraulic decline, underdevelopment of human capital, and the absence of government control over inter-sectoral resource flows. Some of them are analyzed in greater detail than others because they are particularly important for assessing the magnitude of both the challenges in front of the PRC by 1950 and the transformations in the collective period.

Environmental degradation

Land frontier was reached in the 18th century but the population kept rising, from 381 million in 1820 to 569 million in 1952. This made the pressure over natural resources exceedingly unbearable. The share of forests in the total land surface of China decreased from 25% in 1750 to 8.6% in 1949 (Marks, 2011, p. 18; Zhang and Song 2006, p. 384)¹¹⁶

¹¹⁶ Environmental degradation took its severest form in North China. The German geographer von Richthofen, who travelled in the countryside in the 1870s, wrote that "all mountains and all hills are destitute of tree and shrubs and offer a most desolate aspect...If it were not for the [water-storing capacity of the soil formation called] loess, Northern China would already be a desert." By the early 20th century, there was no forest left in Shandong province including on its hillsides. In the northwest, trees became scarce in the Wei River Valley. Compared with the north, deforestation was less in the south but still very significant. Forest cover was largely removed in southern Zhejiang, Guangdong, and southern Yunnan (Marks, 2011).

a phenomenon that caused severe soil erosion, decreased nitrogen level of the soil, silted the irrigation canals, increased the frequency and damage of floods, and spread diseases like malaria and snail fever. Increasingly intense conflicts over scarce natural resources put different classes, social groups, regions, villages, and households against each other. These developments constrained the productive capacity of Chinese agriculture significantly (Marks, 2011).

Hydraulic decline

No state administration in China before 1950 (and, in fact, up until the 1990s) was capable of adequately financing the hydraulic works entirely (or in large part) by using its budgetary resources. Hence, with the important (but *partial*) exception of the Yellow River-Grand Canal infrastructure, which had been financed primarily (but *not exclusively*) by the treasury due to its strategic importance for Beijing, the Chinese states' financial contribution to hydraulic works remained limited. How, then, did the state address this important problem? It did so by sharing the burden of the hydraulic works with the society.¹¹⁷ Since the state did not have the fiscal power to hire construction workers at market wage levels in every single construction project, it often mobilized the labor power and financial resources of the population. Labor mobilization in water conservancy works took three different forms. The first form was the use of the military labor. Since the state had to maintain a certain number of soldiers during times of peace anyway, it seemed economical to many provincial administrators to put the soldiers to temporary work. The

¹¹⁷ The Qing state was more generous to hydraulic projects than its Song and Ming predecessors, which relied almost solely on the corvée and military labor. Nevertheless, it still lacked the necessary fiscal power to develop irrigation on its own. As Perdue notes, "the Qing state did use its tax revenues to support large-scale irrigation projects, but it did not have enough funds to support every necessary project. Subsidies, loans, and tax incentives were significant means of stimulating water conservancy work, but, for most local projects, the officials *had no choice* but to encourage voluntary organization and contributions by local groups" (Perdue, 1987, p. 168, emphasis mine).

second and more important form was the *corvée*. Finally, the state often shared the labor and financial costs of the hydraulic works with the local society without using the *corvée* (in the *narrow* sense of the term). In this case, gentry and non-gentry landlords mobilized the labor of the peasantry. They also covered a part of the costs of the works from their own financial resources. Dike (or polder) associations/communities in several provinces across the Yangzi and Xiang rivers and the Dongting Lake were institutional forms of this state-society relationship (Perdue, 1987; Rowe, 2001, pp. 229-31; Will, 1985; Zhang, 2014).¹¹⁸ The state's performance in mobilizing the labor and financial resources of the rural population largely determined the degree of development of hydraulic infrastructure in prerevolutionary China.

This feature of state capacity invites us to ask further questions: What determined the success/failure of the state in mobilizing labor and financial resources of the rural

¹¹⁸ In his biography of Chen Hongmou, an exemplary Qing official in the 18th century who served as governor, governor general, and lesser provincial posts between 1733 and 1763, William Rowe notes that Chen “did not find it prudent to call for elimination of *corvée* from hydraulic management altogether, but he clearly preferred other alternatives, such as work relief (*gongzhen*) and the use of hired labor...As provincial treasurer in 1733 Chen Hongmou opted to abandon the venerable *corvée* system entirely and undertake the annual Dian River overhaul using labor hired by his office at market rates. By Chen's account, this strategy allowed him to accomplish the maintenance more effectively than ever before, utilizing far fewer laborers and expending altogether approximately the same two hundred taels normally allocated to provision the *corvée* workforce” (Rowe, 2001, p. 228). Rather than proving *corvée* labor's uselessness, this account actually shows that some of the Qing local officials were not capable of supervising the construction workers well and this lack of supervision turned some of the *corvée*-based projects upside down, into projects financed by the state quite generously. Moreover, as an official who was aware of the fiscal constraints of the Qing state, Chen clearly favored the transfer of the labor and other financial costs of the hydraulic works to local populations. During his service as provincial treasurer in Jiangxi in the early 1740s, he closely worked with the local communities to construct and maintain the polders. During that time, “although state supervision had been tightened, these polders remained ‘private’ (*minjian*), and the labor and financial costs of repairs were still distributed on a user's fee basis among farm households...In exchange Chen felt obliged to contribute some state investment in repairing ‘people's dikes’ that had fallen into disrepair as to exceed the capacity of local people to rehabilitate by themselves” (Rowe, 2001, p. 229). In short, since the fiscal power of the Qing state was limited, the mobilization of the labor power and financial resources of the local population remained the basic (and most realistic) administrative principle to meet the huge hydraulic requirements of the Chinese countryside. The particular form of the transfer of hydraulic costs to the local population (*corvée*, work relief projects, and other forms of state-community cooperation) was open to debate within the official circles but *not* the transfer itself.

population? Why the same administration, managed to improve the irrigation infrastructure in one period but failed to do so in the next period? Why the Ming and Qing dynasties had periods of success and failure in hydraulic works? Finally, why the hydraulic infrastructure declined from the late 18th century to 1950? Pierre-Etienne Will (1985) and Peter Perdue (1987), two historians who studied hydraulic works in Hubei and Hunan, respectively, in the Ming and Qing periods, provide a useful theoretical framework to answer these questions based on the concept of the “hydraulic cycle.” Understanding the hydraulic problems of the regions on the Yangzi, Han, and Xiang rivers and the Dongting Lake is necessary to contextualize the cycles historically. In these regions, flood prevention rather than irrigating the fields has been the fundamental hydraulic problem up until today. If these regions are left to their “natural state” without human intervention, they will be flooded annually and large areas will remain as marshland. Therefore, the agricultural history of these regions can be summarized as the humankind’s struggle against water. The people constructed two types of dikes to protect themselves from floods: a. major dikes on the main courses of the rivers to keep the water flowing on the main course and away from their farms and houses, and b. minor dikes to reclaim land from the banks of the rivers and lakes. The construction of minor dikes, which are also called as *yuan* or “enclosure,” was the main form of land reclamation in these regions. However, people’s advance against water created new problems. Every bit of land reclaimed from the rivers and lakes led the water level to rise and made the discharge of water increasingly difficult. Another problem associated with the land reclamation was soil erosion, which continuously silted the drainage canals. Interestingly enough, rather than checking it, siltation gave an additional impetus to land reclamation efforts because the accumulated silts could be transformed into

fertile farmland. However, accumulated silts continuously posed a formidable challenge to water drainage and flood prevention. In short, while the land reclamation through dike construction made the above-mentioned regions the most productive agricultural zones of China, it also increased the environmental dangers they face (Perdue, 1987; Will, 1985; Zhang, 2014).

In parallel with these changes, labor and financial requirements of the hydraulic works increased over time. Even if we disregard the dikes for a moment, the primacy of drainage in these water-rich regions itself increased the labor requirements considerably because “filling the fields with water was as simple as cutting a small channel in the dike, but draining the water out required intensive labor on human- and animal-powered pumps” (Perdue, 1987, p. 175). Dredging the silted canals was also a demanding task. Finally, the maintenance of the major and minor dikes required a significant amount of labor and money. Within these circumstances, the rural administration required three capacities. Firstly, it had to be capable of mobilizing the labor power and financial resources of the local population (both the elites and the commoners) in order to protect them from floods and resulting crop failures. Secondly, the state needed to think in terms of long-term regional planning due to several reasons. The scale of the required collective mobilization was often not small. Many of the minor dikes were not very small and their maintenance necessitated the mobilization of several village (or *yuan*) communities. More importantly, the maintenance of the major dikes often required a collective mobilization at the county, prefecture, and (sometimes) provincial level. There were also cases in which maintenance

required an inter-provincial coordination and effort.¹¹⁹ Also, all these tasks cannot be done once and for all but had to be maintained continuously. In short, long-term regional planning was necessary.

Finally, in order to put regional plans into practice, the state needed to have a sufficient degree of autonomy from the local/centrifugal interests. Regardless of the degree of state involvement in different times, private economic agents (peasants and landlords) with particular and competitive interests dominated China's rural economy before 1950. In a private economy, it is usually very hard to convince the people to contribute to projects that do not benefit them directly and immediately. The best (and probably the most common) example of this attitude in prerevolutionary rural China was the people's lack of will to make labor and financial contributions to large dike projects that benefit several regions. This had been the case despite the fact that many of those people benefited from the dikes directly or indirectly and will lose income if dikes collapse and massive floods happen. "If logic dictated that all communities, however remote, should participate in their upkeep, especially when the importance of the work to be done exceeded the capacities of the people living directly in the vicinity," writes Will, "short-term interest led those communities located farthest away to do everything in their power to shirk the responsibility" (Will, 1985, p. 322).

Moreover, regional rivalries were not confined to the realm of labor and financial contributions. Different regions often fought each other over the content or even the necessity of hydraulic projects. For instance, people living on the opposite banks of the

¹¹⁹ The relationship between the provinces across the Yangzi River and the special relationship between Hubei and Hunan due to the physical connection between the Yangzi River and the Dongting Lake are some of the few important examples of this requirement.

Yangzi and Han rivers confronted each other because “upstream communities wanted to allow the water to pass, while downstream people wanted to be protected from it. Reinforcing the northern dykes resulted in an overloading of the southern dykes and vice versa” (Will, 1985, p. 321). Also, excessive dike building, which was an unintended outcome of increasing population and the resulting zeal for land reclamation, was a serious problem to confront. In fact, making space for hydraulic construction was a common problem and not even restricted to regions depending on dikes. It was an exceptionally difficult challenge in a populous country with a private economy like China before collectivization in which “left to oneself, it was individually more beneficial to clear a small bit of land for extra grain production than to sacrifice it for a reservoir which would benefit everyone equally” (Perdue, 1987, p. 168). To put differently, what benefited short-term individual interests often harmed the long-term interests of the society. Countering this challenge in a private economy required considerable effort on the part of the state. Hence, the state had to limit minor dike construction and land reclamation in order to improve the hydraulic infrastructure. Hence, the Qing state forbade the local people to build dikes in several occasions but their effective enforcement was an altogether different matter (Marks, 2004; Perdue, 1987; Will, 1985; Zhang, 2014). What is important to recognize here is that since the government officials did not live in isolation from the local society and the local elites always did their best to lure them through different material means, all these local pressures could potentially turn the officials into leading figures in regional rivalries and fight each other. These potential problem areas point out to the rural administration’s need to maintain a sufficient degree of autonomy from local interests in order to implement long-term regional development plans effectively. Only a sufficiently

autonomous state was able to check the existing centrifugal tendencies and discipline/mobilize the elites and commoners in large hydraulic projects.

According to Perdue and Will, during the A phases of the hydraulic cycles in Chinese history, the state met all three criteria mentioned above. It managed to devise long-term regional plans to develop the hydraulic infrastructure (of various different scales) that involve various administrative units (from the village communities and local dike associations to counties, prefectures, and provincial governments), keep the local/centrifugal/short-term interests and pressures at bay, and as a result, successfully mobilize the labor and financial resources of the local population to implement those plans. The Ming state's performance until the middle of the 16th century exemplifies the A phase of each hydraulic cycle:

After the dynasty had been finally established and until the middle of the fifteenth century, the central government kept stirring its bureaucracy into putting back into working order the damaged installations, drawing suggestions from the local people, and applying them. Specialized posts were on occasion created. One of the most interesting measures was the sending, in 1394, of students from the Imperial College (*Guozijian*) and "people of talent" (*rencai*) throughout the empire to supervise the building or repair of ponds, reservoirs, dams, lakes etc., for storage or drainage of water. This they were to do by taking advantage of the slack season...As far as Hubei province is concerned, we know that it was from this same period...that rehabilitation and construction work was carried out section by section on several groups of dykes along the Han and Yangzi rivers. In some cases the effort was also concentrated on the second line of protection offered by the enclosures, as well as on the dredging of the channels essential to the drainage of the areas most exposed to flooding. This activity, which was carried out with corvée labor...and under the aegis of the local bureaucracy continued well into the sixteenth century (Will, 1985, pp. 308-310).¹²⁰

Similar processes took place in Hunan¹²¹ and elsewhere. Despite regional variation, it is clear that the start and end dates of the regional cycles were sufficiently close to each

¹²⁰ This case shows that sending the urban experts and the educated youth down to the countryside to assist the rural development effort had deep roots in Chinese history and was not an invention of the Maoist leadership. What set the Chinese communists of the 1960s and 1970s apart from the past practices of utilizing the urban talent for developing the countryside was that they transformed it from a temporary into a permanent practice and integral part of the rural development strategy.

¹²¹ During the early Ming era, the heads of the local *lijia* administrations assumed the responsibility of labor and financial contributions to hydraulic works. In the mid-Ming era, the special post of dike administrator (known as *dizhang*) was created. The general dike administrator (known as *dizong*) had the responsibility of

other and as a whole reflected a general pattern of rise and decline of the state capacity. Hence, the A phase of the Ming era started in the late 15th century and ended in the second half of the 16th century. As we have already examined, the decline of hydraulic infrastructure in B phase was an important cause of the economic decline and the resulting rural unrest that put an end to the Ming era.

A new virtuous cycle (A phase) started with the consolidation of the Qing dynasty in the late 17th century. This virtuous cycle continued until the late 18th century and then followed by a new hydraulic decline (B phase) that continued until the early 1950s, during which the ratio of irrigated area to total cropped area declined from 30% to 17%. Since we have already seen above several regional cases of remarkable hydraulic development during the 18th century, there is no need to repeat them here. Instead, I will restrict myself to making a brief comparison of the A phases of the Ming and Qing. The fundamental characteristics of the state in the A phase of the Ming era (thinking in terms of long-term regional development plans, autonomy from the short-term individual and local interests, and capacity to mobilize the labor power and financial resources of the local populations) remained intact during the A phase of the Qing era. On the other hand, the Qing state was superior to its predecessor in two important respects. Firstly, partly because of its greater loyalty to the Confucian concept of benevolence and partly due to the greater sources under its control, the Qing state allocated more financial resources to the hydraulic works than the Ming rulers. Although the rural population continued to make significant labor and

overseeing the works of several dike administrators. Finally, district and county magistrates were responsible for the working of the system as a whole. During much of the 16th century dike administrators mobilized collective labor to develop the hydraulic infrastructure. For instance, in 1522, magistrate Zhuang of the Yuanjiang district “had the *dizhang* lead the *baojia* and hundreds of laborers” to repair major dikes, which took three months (Perdue, 1987, p. 183).

financial contributions to hydraulic works, its burden was reduced relatively in the Qing era.¹²² Secondly and more importantly, the quality of regional planning and the degree of administrative capacity were higher in the Qing than the Ming era.¹²³

We can now turn into the reasons of the various B phases, i.e. hydraulic declines, in Chinese history. Historical accounts demonstrate that hydraulic decline did *not* stem simply from a lack of vision or intelligence, deliberate negligence, or conspiracy of the foreigners. What appears from the historical accounts is that the *private character* of Chinese rural economy lied at the core of all hydraulic declines. The success of the state in developing the necessary infrastructure to make farming a profitable activity empowered the landlords gradually. During much of the A phase, Chinese landlords responded the state's demand for labor and finance positively for two main reasons. Firstly, they were too weak (due to the previous hydraulic/economic decline and the resulting political chaos) to

¹²² "A feature of paramount importance, such as financial involvement decisively distinguished by the Qing from the Ming state, as the latter relied almost exclusively on unpaid corvée labour (at the beginning of the dynasty) and on financing by the people benefitting directly from the works, a formula which displayed shortcomings at times of hydraulic disaster. It must be made clear, on the other hand, that the hydraulic policies evolved at the end of the seventeenth and in the course of the eighteenth century did not aim to install a "state only" system of some kind, that is to say, entirely run by the bureaucracy and financed by the public treasury (and thus working on an exclusively fiscal basis). Such a system would have been *impracticable* in any case within the framework of the traditional Chinese bureaucracy and tax system, which the Qing had no reason to change. What surfaced on the contrary was an infinite variety of ways of *sharing or cooperating* between administration and local communities (or individual landlords), for both management and financing – or, in other words, a set of compromises which were endlessly adjusted" (Will, 1985, p. 317, emphasis mine).

¹²³ In Hubei, A phase of the Qing "was characterized like that of the early Ming, by an exceptional effort to mobilize and motivate the bureaucracy, both local and provincial. But to this was added a much more evident willingness to supervise the entire system of hydraulic installations in the basin than had been the case during the preceding dynasty... It included an increase in the hydraulic responsibilities conferred on local officials, extension of the control exercised over the maintenance of hydraulic works, including private ones, mobility of staff to ensure an administrative presence in strategic spots, vigilance demanded from the highest ranks of the provincial bureaucracy, which were urged to keep themselves informed of everything down to local dyking, to send reports, to keep the magistrates on their toes, etc." (Will, 1985, pp. 314-6). Similarly, Hunan's Qing cycle "differed in several respects from that of the Ming. The recovery from destruction was more rapid in the early Qing than in the Ming... Qing decision-making was more rational. Unlike the Ming, Qing officials did not take arbitrary measures like the sealing off the drainage routes because they disturbed the geomancy of the Emperor's ancestors' tombs" (Perdue, 1987, p. 203).

resist the wishes of the recently established and therefore very ambitious dynasties. Secondly, landlords were aware of the fact that they could not collect sufficient amount of rent from their tenants as long as farming remained an unviable activity due to hydraulic crisis. These factors underlined the strong landlord-state cooperation in the A phases of China's hydraulic history. However, once agriculture regained its viability and the landlords and peasants improved their economic position, fundamental characteristics of the A phase started to turn upside down. Landlords and peasants became less inclined to accept the labor and financial demands of the state administration. They became more assertive to push for their short-time, individual, and local interests rather than simply following the dictates of long-term regional planning:

Since village institutions were inadequate to check incentives for private aggrandizement, officials during the Ming and Qing were forced to step in and regulate waterworks projects simply to protect local areas from flooding. In so doing, their goal was to restore the ability of producers to maintain autonomously the dikes that protected them. Yet, each time officials tried to intervene, they ran up against fierce resistance from entrenched power-holders who defended local prerogatives against outside reorganization. When the state was restoring the foundations of an economy devastated by war, its initiatives were welcomed as contributions to order and prosperity, but, after one hundred years of peace, local power-holders preferred to use their autonomy in their own interests and to keep state authorities at a distance (Perdue, 1987, p. 165).

In fact,

The state's efforts at developing large mechanisms for water control, far from leading to a stricter control on local society and on the disposition of land resources, favoured on the contrary the hold of private interests over these resources and furthered the development of private property at the expense of what was originally communal or state land. By way of consequence, they rendered the centralized and rational administration of the hydraulic system more and more problematic (Will, 1985, p. 307).

In other words, the success of the A phase in creating a strong private agrarian economy created its own gravedigger in the form of private sector's resistance against long-term regional planning and the state's demand for labor and financial contributions. As their increasing wealth brought more power to the landlords, they became more capable of receiving the support of their tenants through various institutional means (lineage

institutions were the most important among them), which enabled them to successfully challenge the state's attempts to regain its control over land and capacity to organize large projects. For example, when the Huguang governor general dispatched commissions of enquiry in the first few years of the 18th century as part of his plans to dredge the outlets of Zhongxiang, "the powerful families and big clans of Tianmen, Mianyang and Qianjiang had incited their tenants to mobilize in their hundreds and thousands, surrounding the investigators and preventing them from advancing, so that the undertaking was abandoned" (Will, 1985, pp. 328-339).¹²⁴ Maintaining state autonomy against strong local pressures was very difficult. In fact, increasing regional power enabled the landlords to influence the local officials more effectively than before. Within the new political landscape tilted in favor of landlords, local officials were more easily incorporated into local power blocs. As a result, the hierarchical links between the central and local state and horizontal links between different local administrations weakened. For instance, in Hunan in the late 18th century, "officials at the provincial and central level worried about the damage to the environment caused by this aggressive pursuit of profit," however, "private interests in local grain production had grown so powerful that, to protect local producers, district magistrates subverted directives from their superiors" (Perdue, 1987, p. 197).

Hence, in B phases, state's autonomous power declined and enforcing discipline over the local populations to implement long-term, large-scale regional plans became almost impossible. One of the primary manifestations of this problem was excessive construction of minor dikes for land reclamation. This was not a big problem during the

¹²⁴ Although it is empirically possible to identify empirewide A-B cycles, regional variations were considerable. The case of the Zhongxiang dike shows that B cycle started in this region much earlier than others.

first few decades of the Qing era due to the significant population decline during the Ming-Qing transition. However, as the population rapidly recovered and reached a very high level in the mid-18th century and after, increasing land-hunger led to excessive dike construction along the rivers and lakes. It curtailed the area of water flow, raised water to dangerous levels, and increased the frequency and damage of the floods. Starting with the 18th century the Qing officials' continuous attempts to check the growth of the number of dikes (which often involved outright banning of dike construction) failed across the board since no one wanted to sacrifice their individual income derived from reclaimed land by returning their land back to the rivers and lakes (Perdue, 1987, pp. 202-203, 226-227; Will, 1985, pp. 310; Zhang, 2014, pp. 30-40). The decline of administrative control over land and water reached its zenith in the Republican period. In a desperate effort to increase its tax revenue, the state stopped trying to check excessive diking and took the opposite direction by encouraging further diking. This was a quite significant shift because while the Qing state, albeit unsuccessfully, opposed the short-term private interests by considering their negative environmental and economic consequences in the long run, the Republican state, thinking like a private agent, opted to pursue its short-term fiscal interests with an almost total disregard of their negative consequences in the medium and long run.¹²⁵

¹²⁵ A Chinese scholar of the 1930s criticized this suicidal policy by writing that: "As concerns the encroachment upon [floodable] lands...and the clearing and enclosing of lake fields, the former Qing dynasty had misgivings...and promulgated strict prohibitions against it. Now since the beginning of the Republic, as [the administration] wished to increase fiscal income...people were empowered to enclose and reclaim land arising from silting in the rivers and lakes and to report it, in exchange for which they received certificates [of ownership] and were subjected to taxation. Although the income from land tax increased, the vacant space left [to the water] of the rivers and lakes was reduced by the day, and each day the floods became more serious. This is what is called a gain which does not make up for a loss" (Zhong, 1936, cited in Will, 1985, p. 347).

To make things worse, starting with (different points of) the 18th century but especially in the 19th and 20th centuries, the competition among the localities and resistance against large-scale projects that do not exclusively and immediately benefit local interests became the norm.¹²⁶ The decline of rural cooperation manifested itself both in the micro- and macro-level. To start with the former, competing private interests put serious obstacles to collective action even at the lowest level of hydraulic administration. For instance, in Jingmen county of Hubei, lack of cooperation was a serious problem even within each minor dike. Although “a system for maintenance of the dykes had been eventually established on a pro rate basis involving all the protected fields, not just those contiguous to the dykes,” as a result of competing private interests, “in the vast majority of cases, the temptation was great for ‘those far away and residing in elevated places’ to refuse to work on the dykes” (Will, 1985, p. 327). It was not surprising that cooperation between more distant regions declined even more. Changing relationship between five counties of two prefectures of Hubei regarding the maintenance of the Shayang dike, a major dike on the Jiangnan Plain, exemplifies the decline of interregional cooperation. The dike was reconstructed by the common effort of the five counties in 1567 (the later phases of the Ming’s phase A) and again in 1674 (the early phase of the Qing’s phase A). However, after 1674,

Help from Jingzhou had been refused to Anlu (in retaliation against a parallel refusal by the Jingmen administration) and that, consequently, the responsibility for the Shayang dike

¹²⁶ “The drive for profit, accompanied by increasing commercialization of agriculture, tends to undermine incentives to cooperate. The benefits of a given dike cannot be restricted only to those who contribute to its repair. Since everyone near the dike benefits from its protection, whether or not he contributes to it, it is natural to contribute less than the amount necessary. The state role becomes one of encouraging landowners to work together by invoking traditional ideals of harmony, even though *market incentives stimulate the landowners to neglect repairs*. Constant conflict between upstream and downstream users over water produces tensions which require official intervention, but the state is able to settle only local conflicts that led to court cases. It cannot enforce any wider regional planning” (Perdue, 1987, pp. 201-202, emphasis mine).

fell entirely on the inhabitants of Anlu, and worse still, on the sole population of Jingmen, since in 1680 a former magistrate of the Board of Works, had put an end to the aid from Qianjiang and Mianyang by arguing that the dyke was not on their territory...Non cooperation should be...the rule, and it seems that after a relatively experimental period at the beginning of the dynasty, the Qing government finally stood by this opinion in order to stop the disputes aroused each time mutual aid between different prefectures was attempted (Will, 1985, pp. 323-324).¹²⁷

On the other hand, although non-cooperation that we observe in this case was a serious problem, it was certainly not the worst. In many cases, non-cooperation gave way to open and intense fighting between regions. For instance, in Hubei, numerous incidents were recorded during the 19th and 20th centuries in which in order to protect their land from flooding, people of one region deliberately opened up the dikes and flooded the land of the people of other region. These acts of sabotage caused numerous bloody feuds that put not only the landlords and peasants but also the local officials of different regions against each other.¹²⁸

On the other hand, Hubei and Hunan were not the worst cases of hydraulic decline. The most dramatic decline happened in the Yellow River-Grand Canal region located within Hebei, Henan, and Shandong provinces. As we have examined, the hydraulic infrastructure of this region was protected well by high government spending for a long

¹²⁷ Same as the case of the Zhongxiang dike, the case of the Shayang dike case also points out to the regional variation of hydraulic cycles. The warning signals of the hydraulic decline appeared (and recognized by the authors of the local gazetteers) before it became a more general phenomenon.

¹²⁸ For example, in 1882, the magistrate of the Jiangling district led the local people to reopen the blocked Zibeiyan by force, which led the flooding of the southern side of the Chailin River. A huge feud broke out among the people residing in different parts of the river and continued until the central government allocated a special fund of 140,000 taels for dredging the river and building sluice gates. This incident, which was *not* an extremely exceptional event, shows that local officials were involved in feuds and sabotage activities that harmed the agricultural production and social stability in large areas, and created a huge burden on the central government's limited budget. There was no fundamental change in the situation during the Republican period. To mention one among many examples, people living in different enclosures around the Lao Linchang River in Jianli fought over the control of a single section of the dike. While the people living in the upper reaches of the dike wanted to break up the dike to drain their land, people of the lower reaches rejected this proposal to protect their land from flooding. Starting with 1926, they waged bloody fights against each other for many years (Zhang, 2014, pp. 200-201).

time. The region's problems between the late 19th century and 1950 stemmed from two main reasons: a. the decrease in state investment and, b. the decline of the state capacity similar to the above-mentioned cases. Decline in state investment was closely related to the dramatic change in the geopolitical environment. As we will examine below, the Qing's combination of low taxation and minimal state started to unravel in the 19th century. The cost of endless wars and heavy war indemnities crippled the (already limited) fiscal power of the state. Unable to recover these costs internally through increasing its taxation capacity dramatically, the Chinese state was forced to cut its development spending. Secondly and related to the first reason, the quantitative increase in fiscal costs soon led to a qualitative change in the Chinese statecraft from a broad-based, empirewide development policy that benefited less advanced regions to a selective regional development policy that prioritized a few (already) advanced regions.¹²⁹ Since the Yellow River-Grand Canal region was among those regions more dependent on central government spending than more advanced areas, decrease in government spending took a heavy toll from its infrastructure.¹³⁰ The situation worsened further during the Republican period. The total amount of spending for hydraulic works by Hebei, Henan, and Shandong provincial governments in the 1920s was

¹²⁹ "As fiscal strains mounted and China faced a world of competing nation-states, its statecraft began to emphasize such goals as efficiency and national strength above stability it was at this point that state policy began to exacerbate regional inequalities rather than work against them...As long as China worried about military threats from Central Asia or its own assimilated minorities, funds flowed to poor areas; once the principal threat was Westerners along the coast and in other commercially attractive areas, the government focused its attention on such relatively well-off areas as Fengtian, Tianjin, the Yangzi delta, and the southeastern coast...From an emphasis on 'reproduction,' in which all areas mattered and those that seemed to have the greatest troubles sustaining subsistence on their own often received particular attention, the state moved to a focus on defending key areas, competing with other states...and encouraging some areas to 'get rich first'" (Pomeranz, 1993, pp. 132, 274).

¹³⁰ As part of its cost-cutting efforts, the central government reformed the Grand Canal administration in 1891. The most important reform measure was the abolition of the battalions of troops (*ying*), which contributed to the maintenance of the infrastructure until that time. The new system that replaced the canal troops was underfunded and "had built-in tendencies toward inferior work and corruption" (Pomeranz, 1993, p. 193).

less than what Henan spent alone in the 1840s (Pomeranz, 1993, pp. 162-163). In short, the region's hydraulic infrastructure remained quite underfunded.¹³¹

On the other hand, the hydraulic decline of the region was not caused simply by government neglect. As government funds dried up, the central government ordered all units of local administration to fill up the vacuum through stepping up the mobilization of the labor power and financial resources of the local society and shifting the responsibility of hydraulic maintenance to the local organizations. Hence, at this critical point the story of the region began to converge with the story of Hubei and Hunan. During the late 19th and the first half of the 20th century, it became increasingly obvious that since the private economic interests dominated the rural economy, the transfer of the hydraulic responsibilities from the central state to the local communities would not automatically lead to an increase in the collective effort to fulfill the responsibilities. On the contrary, private economic interests gave rise to competition rather than cooperation, and to short-term local profiteering rather than long-term regional planning. Furthermore, under the increasing pressure of the local interests, "the institutional bases for cooperation between provinces, between counties in the same province, and between sub-county powerholders were all weakened" (Pomeranz, 1993, p. 172).

As elsewhere, as a result of the state's failure to counter the private interests in favor of excessive diking and land reclamation,¹³² water level continued to rise and led to more

¹³¹ A quite disheartening outcome of this was that although China gained the opportunity to construct stone dikes with the assistance of the Western engineering know-how from the late 19th century on, which might stop the hydraulic decline and decrease the long-term cost of maintenance works in the region simultaneously, the state failed to generate funds to use this historical opportunity (Pomeranz, 1993, pp. 164-168).

¹³² In the Shandong part of the Yellow River, for example, after the decentralization reform of 1891, "more people planted close to the river, thus eliminating the physical margin for error that had originally justified the central government's withdrawal." Although the top central government officials like Li Hongzhang and Zhou Fu proposed the government to buy these lands, the state could not raise the needed funds or declared

frequent and harmful floods in North China. Another striking similarity between the Hubei-Hunan region and the Yellow River-Grand Canal region was the widespread character of sabotage activities stemming from conflicting local interests. People were opening up the dikes and flooding the lands of other people in order to protect their own land from floods.¹³³ Finally, landlords blocked the government efforts to mobilize the labor and financial resources of the local communities in rural North China. A striking example in this regard is the failure of the urban elites from Jining and southern parts of the region to self-finance the infrastructure development by using a part of the agricultural income generated through the improved infrastructure due to the strong opposition of the landlords. On the other hand, like other regions, there were hydraulic projects successfully implemented. However, when dikes collapse in areas of hydraulic decline, these successful areas also suffered from severe flooding. In other words, local solutions were no substitute for large-scale solutions (Pomeranz, 1993, pp. 224-25, 265).¹³⁴

As a result of these factors, the region witnessed a disastrous hydraulic decline. An American hydraulic specialist, who inspected the Shandong part of the Grand Canal in 1919 and 1920, stated that it had “the worst flood problem of any canal in the world.” Agricultural output loss (mostly due to flooding) in the Yellow River-Grand Canal region

the area as eminent domain. As a result of this evident decline of the government control over land, “the idea of moving people back from the Yellow River was dropped, and private dikes continued to interfere with large-scale river control” (Pomeranz, 1993, p. 204).

¹³³ For example, during the disastrous floods of 1917, some villagers from the west bank of the Grand Canal near the Dezhou-Enxian border deliberately broke the dikes on the east bank, which resulted in the flooding of almost two million *mu* of land. This type of sabotage was so widespread that the *North China Herald* called it “an old Chinese practice” (Pomeranz, 1993, p. 163).

¹³⁴ The Wanfu River project that involved the collective effort of nine counties of southwestern Shandong in the 1920s was one exemplary case of successful hydraulic development. However, the strong interconnectivity of the waterways of the Yellow River-Grand Canal region required a truly macro-regional effort and rendered all isolated local successes ineffective. Hence, in 1933, a Yellow River flood damaged two million *mu* of farmland in the Wanfu River area. Two years later, another flood created the highest casualties and most refugees in this area (Pomeranz, 1993, p. 265).

in the 1920s and 1930s was at least 33.7 million ¥ (Pomeranz, 1993, p. 181, 215).¹³⁵ Moreover, the state was equally incapable of developing irrigation. In 1950, the share of irrigated area within the total cultivated area was only 7% in Hebei and 3% in Shandong and the quality of irrigation within this limited area was not high because of its sole dependence on wells (Huang, 1985, p. 31). In relation to the above-mentioned constraining factors stemming from the private character of prerevolutionary China's rural economy, fragmentary character of private landholdings and the government's lack of control over land made a downward pressure on irrigation development in the region.¹³⁶

Finally, even the Yangzi Delta and Guangdong, economically most advanced regions of China, were not shielded from the hydraulic decline entirely. Similar to the cases discussed above, short-term and competing private interests underlined the weakness of collective action in the Yangzi Delta:

Collective drainage in times of flood and severe waterlogging was the only form of organized community water control. These were emergency situations in which all members of the community were placed equally at risk, and the community was thus able to mobilize itself for collective action. But the routine maintenance of dikes and embankments or the dredging of canals and ditches was much harder to coordinate, because members of the community were affected differently. If part of a dike or embankment caved in...the impact was on only the households whose fields were adjacent to it. Those same households were of course also in the best position to maintain the waterway, and it would have been difficult to get more distant households to take on the work. The same kind of logic applied to the dredging of local canals and ditches. A slow-moving stream with little water could provide sufficient irrigation water for the adjacent parcels, though not for those farther inside the dish-shaped yu. The peasants' sense of urgency about such

¹³⁵ Apart from output loss, the swift decline of transportation on the Grand Canal (a part of the general hydraulic decline) restricted the import of vital materials like timber and adversely impacted the living standards in rural Hebei and Shandong (Pomeranz, 1993).

¹³⁶ In his discussion of the reasons behind the limited use of chemical fertilizers in Shajing village in Hebei, Huang writes: "Chemical fertilizer requires irrigation, and irrigation in Shajing has come only through state intervention. That intervention was not forthcoming from the prerevolutionary state...The proportion of land placed under maize has been increased in Shajing only with the dramatic re-grading of land and construction of ditches and canals. Those efforts were based on a *collective village organization of a kind that is difficult to imagine under the prerevolutionary system of fragmented individual parcels*. Thus, even if a low-cost chemical fertilizer had been available in the 1930s; it alone could not have effectively altered the condition of agriculture in the village (Huang, 1985, p. 183, emphasis mine). Land fragmentation put a similar obstacle to irrigation expansion in underdeveloped provinces such as Inner Mongolia, Ningxia (Greer, 1979, p. 99), and Shaanxi (Vermeer, 1988, p. 177).

chores was thus different depending on the location of their fields within the embankments (Huang, 1990, p. 37).

Since the private and competitive character of the rural economy lied at the core of the problem, the A phase(s) of hydraulic rise due to high state capacity and collective mobilization eventually led to B phase(s) of hydraulic decline:

Given so wide a divergence of interests, long-term ecological degeneration was almost unavoidable, only periodically slowed down by vigorous state effort...In the Republican period, as in the Qing, there continued to be a large gap between large water-control projects managed by the state and village-level responses to emergencies. What was actually obtained was a haphazard system in which the lowest level were left to fend for themselves until a situation degenerated into a disaster. When a disaster struck at the village level, the problem could be met by collective community organization...and a disaster at the county level or above could be dealt with by the state. But any problem that fell between those levels easily went unattended (Huang, 1990, pp. 38-40).

In the absence of an effective institutional solution to these problems, it was difficult to develop agricultural productivity of the delta further. Similarly, although Guangdong reached its upper-bound of cultivated area in the 18th century, in the 1930s the Bureau of Land Administration estimated that there was an extra 14 million mu of land, equal to one-third of the existing cultivated area, which could be potentially opened up to cultivation. However, it required a significant amount investment especially to irrigation in drylands but neither the state nor the dispersed small peasantry was capable of making that investment (Lin, 1997, p. 30). Therefore, realization of this potential had to wait until the state acquired the capacity to combine its fiscal resources with the collective mobilization of labor and finance. In addition to irrigation problems, the decline of the dike infrastructure took a heavy toll from agricultural production between 1800 and 1950.¹³⁷

Underdevelopment of human capital: As we have examined in the Introduction, the health and education level of the labor force directly determines its productive capacity.

¹³⁷ Sichuan constituted the only major exception to this general pattern because Dujiangyan hydraulic works, which had 2000 years-long history, continued to function well and kept silting and flooding at a minimum level (Marks, 2011, p. 14).

Hence, it is hard to miss the strong parallel between the low level of human capital and the poor economic performance of rural China. Although the literacy rate in China was among the highest of the world in the 18th century (Zhan, 2013, p. 86), the situation radically changed during the following 150 years. Despite the attempts of the Republican administration and non-governmental movements such as the Rural Reconstruction Movement in the 1920s and 1930s century, China's comparative educational performance was quite weak. Buck's survey of 1929-31, which was biased towards the wealthier regions (Bramall, 2009; Esherick, 1981; Lippit, 1974), found that the level of male and female literacy in rural China as 30.3% and 1.2%, respectively (Buck, 1937, pp. 291-373). In 1950, literacy rate in China was 20% and years of education per person aged 15-64 were only 1.60, very similar to India, where literacy rate stood at 18% and years of education were 1.35, and far below the levels of Japan and Western societies.¹³⁸

When we turn our attention to public health, we see a similar picture. There was not any significant difference between China and the Western Europe until the mid-18th century. However, things changed dramatically after that point as the public health, in conjunction with economic development, improved rapidly in the West, while the health of the Chinese population underwent a significant decline. One of the most important causes of this decline was the decline of labor productivity in agriculture, per capita grain output and availability in China as a result of the rapidly increasing population pressure on farmland. In the Yangzi Delta, the most advanced region of the empire, male life expectancy (at the age of 15) fell more than 20 percent in the second half of the 18th century.

¹³⁸ Literacy rate was above 75% in Japan in 1950. USA and Canada had a literacy rate of above 95% by the early 1940s. In the early 1950s, literacy rate was above 80% in northern and western parts of Europe with the exception of Italy, Spain, and Portugal, which had a literacy rate of over 50% (UNESCO, 2006, pp. 191-193).

In northern Zhejiang, another advanced region adjacent to the delta, death rates rose from 23 to 25 per thousand people in the 18th century and to over 50 at the time of the Taiping Rebellion of the mid-19th century (Brenner & Isett, 2002, pp. 641-642).

On the other hand, the Republican period witnessed two positive developments in the realm of rural healthcare. Firstly, modern medicine started to make inroads into the countryside. Various actors including the modern healthcare bureaucracy organized under the National Health Administration (NHA), indigenous non-governmental movements such as the Rural Reconstruction Movement, foreign organizations like the Red Cross, and Christian missionaries contributed to the (limited) entry of modern healthcare practices into rural China, especially in the 1930s and 1940s. More importantly, in the 1930s, a consensus was achieved around the idea that state investment would not be enough to develop healthcare services for almost half-billion Chinese villagers. According to this consensus, the state had to find ways to mobilize the labor and financial resources of the rural population in order to address the rural health problem effectively. These points constituted the core of the rural health system in the collective era. However, making good policies and putting them into practice are two different things. The republican administration obviously could not go beyond the stage of pilot projects and establish an effective rural health system all over the country (Lucas, 1980, 1982). Japanese occupation and the resulting war mobilization made any large-scale effort to establish an extensive rural health system impossible. Hence we simply do not know whether the republican administration might succeed to achieve its goals if there was no war. On the other hand, it seems obvious that in a poor and vast country like China it was impossible to establish an effective rural health system without a dynamic economy, an effective system of taxation, and a strong

state that could transfer a significant portion of its medical personnel to the countryside for a long time. Although pilot projects of the 1930s and 1940s gave some hope to this endeavor, there was not any indication that these conditions were present in the republican era. As we will see clearly in our discussion of the Indian case, in a large county it is possible to observe many successful pilot projects within a generally unsuccessful system. Hence it is necessary to recognize the positive value of the rural health policy orientation of the republican period without exaggerating its possible effects. They were put into practice only after rural collectivization.

Finally, a brief review of the rural health situation of the first half of the 1950s is in order. The health of the rural Chinese remained very poor in this period due to the continuation of poverty, wars, and social instability. Since the new rural health policy could not be put into practice at a meaningful scale, there was nothing much to improve the situation. Poor hygiene was a common problem. Diseases such as schistosomiasis (snail fever), bubonic plague, smallpox, measles, bacillary dysentery, and tuberculosis were widespread. Healthcare professionals and drugs were generally unavailable in the countryside. The villagers who could afford medical costs (in many cases through getting loans from relatives or moneylenders) had to travel to the towns and cities to see a doctor. These were the general characteristics of rural China that were common even in the most advanced areas. For instance, in Songjiang prefecture near Shanghai, which was among the most advanced regions of rural China, %73.6 of military aged males had schistosomiasis in 1953. In many of the less developed areas this ratio was about 90 percent (Gross, 2010, p. 527).¹³⁹

¹³⁹ In the Shifang county of Sichuan, a place poorer than Songjiang, up until the mid-1950s, “smallpox took the lives of so many children that it was common to see little coffins tied among the trees since folk tradition

As a result of the dismal condition of rural health services, life expectancy at birth, the most important healthcare indicator, was dismally low in pre-1949 China. Barclay et al.'s study, which is based on the data of the rural survey conducted by John Buck's team in 1929-31, estimated the life expectancy at birth in rural China as 24.6 for males and 23.7 for females (Barclay et. al., 1976, p. 620). This data casts shadow on the reliability of the official statistics presenting the life expectancy at birth in China as 35 years in 1950. The national-level data does not have a rural-urban breakdown and it seems safe to assume that life expectancy in rural areas was lower than 35 years. On the other hand, even if we take the official data as accurate for rural China, it still indicates a very low life expectancy.

To conclude, rural China's human development record was very poor during the 150 years preceding the Chinese Revolution. As a result, the quality of the rural labor force was very low. A vicious cycle was clearly present in rural China, in which poor quality of labor impacted the economic performance negatively and poor economic performance kept the quality of labor at a low level. This situation was not conducive to improve labor productivity in all sectors of the rural economy and especially in industry, which required a higher quality of labor to go beyond handicrafts and form a modern rural industry.

The lack of development finance before 1950

Agriculture played a critical role in all major cases of successful economic development at least since the 18th century, both *internally* (transfer of the agricultural surplus from the peasantry to the industrial bourgeoisie in capitalist countries or to the

held that those who perished from this disease could not be buried in the ground.” The majority of the rural population was suffering from parasitic diseases such as schistosomiasis, hookworm, and roundworm. The use of opium was widespread. Life expectancy was 33 years. There was only one clinic in the entire county (Endicott, 1988, pp. 155-60). In the Aohan county of Inner Mongolia, a region much poorer than Shifang, diseases such as bubonic plague, smallpox, measles, bacillary dysentery, and tuberculosis were causing thousands of deaths (Zhan, 2013, p. 197). There are innumerable similar cases of which I do not cite here in order to save space.

industrializing state in non-capitalist countries) and *externally* (transfer of the agricultural surplus from the peasantry of the colonies to the industrial bourgeoisie of the colonizers). Of course, the financial contribution of the agricultural sector became increasingly less necessary after the industrial sector of these countries matured enough to generate the required financial resources for industrial expansion from within and without the assistance of agriculture. However, this does not change the fact that the early phases of industrialization in Western Europe, Japan, and Soviet Union relied heavily on the contribution of agriculture.

The relationship between agriculture and industry in Western Europe's economic take-off provided a road map for the later industrializers. In fact, the performance of channeling the agricultural surplus to industry impacted their comparative economic performance significantly. *Some* of the latecomers, like Japan and the Soviet Union, successfully used two main mechanisms to industrialize. Firstly, they taxed the agricultural sector heavily and used this revenue to finance the industrial sector. Secondly, they used the mechanism known as the "price scissors" to keep the increase in agricultural prices lower than the increase in industrial prices. In other words, agricultural was taxed twice for the sake of industrialization.

In contrast to these cases and in similarity to colonial India, the state's failure to channel the agricultural surplus was a major factor behind China's failure to establish a strong modern industrial sector before 1950. It is possible to divide the history of public finance during the 250 years preceding the PRC (roughly) into two periods. In the first period, which lasted between the Qing's consolidation of power in the late 17th century and the White Lotus Rebellion of 1796, state's effort to generate more tax revenue was nominal

and tax burden of the rural population (both the rich and the poor) was light. In contrast, in the second period, between the early 19th century and 1950, the state aimed to increase its tax revenue and the tax burden of the rural population increased. This contrast invites us to ask whether the state managed to generate development finance for modern industrialization.

Two main factors prepared the ground for low taxation in the 18th century rural China. Firstly, due to the favorable political and geopolitical context as well as the Qing emperors' particular understanding of "benevolent governance," the state was not willing to raise taxes. However, this factor alone cannot explain low taxation adequately. Secondly and equally importantly, in relation to its inability to penetrate the sub-county level directly, the state had a limited control over land during the entire Qing period. Even if the state wished to tax more, it did not have enough power to do so. This was also directly related to the private sector's gaining of upper hand over the state that we have seen in our discussion of the hydraulic cycles. Once the private sector started recovering its power, it blocked the state's attempt to tax agriculture. The failure of the Qing attempts to carry out an empirewide land survey due to rural resistance reflected this phenomenon.¹⁴⁰ As a result, nearly one-third of all cultivated land was not directly taxed by the middle of the 18th century (Myers & Wang, 2002, p. 596).

Hence, the 18th century Chinese state lacked the funds to carry out an aggressive industrialization campaign on its own or by providing low-cost credit and subsidies to

¹⁴⁰ The last empirewide land survey was conducted by the Ming state in 1578. Central government attempts to conduct land survey in Hebei, Hubei, Jiangsu, and Shandong between 1676 and 1686 failed as a result of the effective opposition of the local elites. After that, central government realized that it was not capable to carry out an accurate empirewide land survey and therefore accepted the Ming survey of 1578 as the basis of agricultural taxation (Myers & Wang, 2002, p. 594). Since the total size of farmland expanded greatly as a result of the land reclamation efforts in the 18th century, basing taxation on the Ming records practically meant allowing large-scale tax evasion.

urban industrialists. Moreover, since the high degree of rebelliousness of the working classes in towns and cities forced the Qing government to refrain from supporting the urban entrepreneurs against their workers, most of the urban entrepreneurial families retreated from industrial undertakings, joined the ranks of landed gentry, and increased the weight of unproductive landlordism within the economy (Hung 2008). Consequently, in contrast to the 18th century England and 19th century Japan, a modern industrial bourgeoisie failed to emerge in urban China during the 18th century. As the history of rural industrialization shows, there has never been a great wall between urban and rural industrialization. Although rural industrialization, in its proto-industrial and handicraft forms, was able to develop without much linkage with the urban industries, in the modern industrial era, urban-rural linkages (through various forms of subcontracting/ancillary relations and the supply of modern industrial inputs) became a crucial factor to push rural industry beyond the handicraft form and proto-industrial stage (Saith, 1986). In brief, urban industry's underdevelopment and rural industry's failure to modernize are often parts of the same process. For these reasons, in order to emphasize its difference from the 18th century England, where "accumulation by dispossession" took place, I describe the 18th century China, where state extraction from all segments of the peasantry and industrial capital accumulation remained nominal, as a case of "no accumulation and no dispossession."

How much did this situation change between 1800 and 1950? As the rapid decline of China's position in the world economy in this period indicates, nothing happened to fundamentally reverse this process. Since labor productivity did not increase, Chinese agriculture's capacity to produce investable surplus did not improve. In addition, the state failed to utilize the agricultural tax and price scissors to transform the existing surplus into

development finance for industrialization. Let's start by looking at taxation. The Chinese state's search for an effective taxation system started as a response to the security challenges coming from both inside and outside the empire.¹⁴¹ Starting with the First Opium War (1839-42) and culminating in the full-scale invasion of Japan in 1937, China suffered from a series of military defeats by the foreign powers. On top of and in relation to that, internal rebellions such as the White Lotus Rebellion (1796-1805), the Taiping Rebellion (1851-64), the Boxer Rebellion (1898-1900), and finally the civil war between the communists and nationalists in the 1930s and 1940s made social instability rule in the same period. The soaring costs of suppressing rebellions and fighting foreign armies as well as the war indemnities forced upon China following the major defeats wiped out the budget surpluses that were sustained until the end of the 18th century and led to increasing budget deficits in the following period.¹⁴²

Neither the Qing nor the Republican state managed to solve this problem. The Qing state failed to replace the tax collecting intermediaries with state officials or organizations that fulfill similar bureaucratic functions without employees on government payroll. To

¹⁴¹ It is a well-established fact that the states' desire to cover the increasing costs of warfare through more effective taxation of the population was a major factor behind the formation of the modern state in Western Europe (Braun, 1975; Tilly, 1992). In Asia, the source of the motivation for modernizing the tax system was similar which became an urgent necessity in the 19th century. For instance, the Japanese state started taking steps to rationalize and increase agricultural taxes in order to save the country from becoming a colony of the West, which became a near and visible threat after Japan's humiliating opening up to the world economy in 1854 under the threat of the US navy (Hayami, 1975, pp. 46-48).

¹⁴² The first blow to the state budget came with the White Lotus Rebellion: "The accumulated reserves in the Board of Revenue treasuries, which probably peaked at over 80 million silver taels in the late 1770s and were still around 60 million at the end of the Qianlong reign, were more than wiped out by the cost of suppressing the rebellion, which was estimated at 120 million taels. This had a devastating and permanent effect on the capacities of the Qing administration, at all levels, for the remaining century of imperial rule" (Rowe, 2009, p. 157). In the Treaty of Nanjing, which was signed in 1842 following the Chinese defeat in the First Opium War, the Qing state agreed to pay Britain a total amount of 27 million silver dollars, including the compensation for the destruction of their opium and war indemnity (Maddison, 2007, p. 45). In 1903, three years after the suppression of the Boxer Rebellion, the Qing state was required to pay more than 50 million *liang* as war indemnity (Pomeranz, 1993, p. 160).

make things worse, unable to repress the White Lotus Rebellion with its weak army, “the Qing state opened a Pandora’s box of local militarization, encouraging gentry elite to collaborate with bureaucrats to organize local militias” all over the country (Hung, 2008, p. 581). Ironically enough, in a period in which the European monarchies rapidly eradicated the centrifugal forces by centralizing the state (and public finance), the Qing state strengthened the centrifugal forces and increasingly resembled the European feudalism. After failing to suppress the Taiping Rebellion, the central government relied even more on the local militia organizations. In fact, these organizations formed provincial armies autonomous from Beijing. This process had two important fiscal consequences. Firstly, the policy of low taxation ended. The tax burden of the peasantry rose considerably. Secondly, the militarized local elites’ share of the rural tax increased substantially at the expense of the central government. Especially after the Taiping Rebellion, those elites appropriated 20 to 30 percent of all taxes raised for military purposes. In other words, the local elites rather than the state benefited greatly from tax increases. Unsurprisingly, unproductive landlordism, a built-in tendency of imperial China’s agrarian structure that was kept in check by the Qing state temporarily, returned back to the countryside with a vengeance. Wealthy urbanites increasingly shifted from industrial entrepreneurship back to unproductive landlordism. Despite the increase in the total tax revenue in the late 19th and early 20th century, it failed even to cover the soaring costs of warfare and indemnities, the central government was unable to carry out a nationwide industrialization campaign like what the Meiji state accomplished in Japan in roughly the same period. It was therefore not surprising that the industrialization program of the Qing state in the 1860s ended up with a disastrous failure (Hung, 2008, pp. 581-582).

The Republican state attempted to solve this problem by suppressing the warlords with the Northern Expedition in the second half of the 1920s and continuing the late Qing efforts to transform the village into a reliable tax unit. These measures improved its taxation capacity to a certain extent but failed to solve the general fiscal problem because all sorts of elite intermediaries continued to expand their profit-oriented tax collection activities by forming networks involving the local officials at different levels (Duara, 1988). As a report of the Ministry of Industries of the Nationalist government in 1935 stated, “taxes paid by farmers in China are often excessive... their assessment is unevenly distributed, and...various forms of corruption in the collection of taxes by local governments are common” (Ministry of Industries, 1935: 95). As a result, the ratio of the central government revenues to GDP, which measures the taxation capacity of the state, remained very low, increasing from 3% in the late 19th century to only 5% in the Republican era, while the same ratio was between 12% and 17% in Japan at the beginning of the 20th century (Nurkse [1952] 1967, p. 75; Popov 2014: 82). In other words, although the tax burden over the peasantry increased tremendously from 1800 to 1949, which increased the pressure of dispossession over the villagers significantly and encouraged them to join the rebellions throughout the period and support the communists in the 1930s and 1940s especially in North China (Duara, 1988; Huang, 1985; Perry, 1980), taxation capacity and fiscal power of the state remained very low. The use of the tax revenue for economic development was also quite limited.¹⁴³ Finally, during the pre-1950 period, the Chinese state’s control over

¹⁴³ For instance, as the Office of the Pacification Commission in Guangdong, a strongly anti-communist organization reported in April 1933, “during the last few years...the burden on the people is... increasingly heavy. Numerous tax bureaus have been established in every locality, extracting money under all sorts of cleverly named surtaxes, and making requisitions for various pretended military purposes. These miscellaneous levies far exceed the tax proper, they satisfy the rapacity of the local gentry, *but hardly at all contribute toward the cost of public works* (Lin, 1997, p. 109; emphasis mine).

agricultural prices, even at its peak level in the 18th century, was restricted to the use of public granaries for price stabilization during times of great distress. There was virtually no indication that the state acquired any significant capacity to use the mechanism of price scissors to channel the agricultural surplus to the emerging industrial sector. In short, the pattern of development finance in China switched from “no accumulation and no dispossession” in the 18th century to a new pattern between 1800 and 1950, which can be characterized as “dispossession without accumulation.”

The performance of China’s rural economy from 1800 to 1950

Our discussion has shown that increasing population pressure on natural resources, severe environmental degradation, rapid decline of the hydraulic infrastructure, low level of human capital, unproductive landlordism, the state’s lack of capacity to control inter-sectoral resource transfers, and rapidly deteriorating geopolitical environment heavily constrained China’s rural economy for more than 150 years. As Table 47 shows, land productivity hardly improved between 1820 and 1952, stagnating the per capita crop output. In his study on the production and consumption of grain in China in the PRC, Kenneth Walker defines the level of grain self-sufficiency as an annual per capita consumption between 275 and 309 kilograms, which can provide per person a daily intake between 1700 and 1900 calories. According to Walker, per capita production of more than 310 kilograms and above defines a situation of grain surplus in which peasants can *voluntarily* bring their product to the market without state intervention (Walker, 1984, pp. 3-4). This is below the threshold level accepted by the World Food Programme of the United Nations, which currently defines the daily intake of 2100 calories as the minimum consumption requirement per person (World Food Programme website). Per capita output

of grain (including rice, wheat, corn, soybeans, and tubers) was 288.1 kilograms in China in 1952 (State Statistical Bureau of the PRC, 1992, p. 353). Hence, even if we accept Walker's definition of self-sufficiency, it is still clear that per capita grain production in 1952 was not above the minimum self-sufficiency level. Given the great share of grain in Chinese diet at the time,¹⁴⁴ it is clear that the agricultural sector was not making any tangible surplus in 1952. Hence, the significant surplus transfer from the peasantry to the landlords in the 1930s and 1940s, to which we will turn below, could be made through great sacrifices from household consumption. As Table 47 demonstrates, agriculture (combining farming, forestry, and fishery) comprised 68.5% and 55.7% of the GDP in 1890 and 1952, respectively. Poor agricultural performance therefore automatically meant a weak economy and low living standards.

Table 47. Composition of China's GDP (1890-1952) (% of total GDP, in 1933 Prices)

	1890	1913	1933	1952
Agriculture	68.5	67	64	55.7
Handicrafts	7.7	7.7	7.4	7.4
Modern	0.1	0.6	2.5	4.3
Manufacturing				
Mining	0.2	0.3	0.8	2.1
Electricity	0	0	0.5	1.2
Construction	1.7	1.7	1.6	3
Traditional	5.1	4.6	4	3.8
Transport & Comm.				
Modern	0.4	0.8	1.5	2.8
Transport & Comm.				
Trade	8.2	9	9.4	9.3
Government	2.8	2.8	2.8	
Finance	0.3	0.5	0.7	

¹⁴⁴ Per capita production of oil-bearing crops (7.4 kilograms), fatling hogs (0.12 kg.), pork, beef, and mutton (6 kg.), and aquatic products (3 kg) was negligible in 1952 (State Statistical Bureau, 1992, p. 353).

Personal	1.1	1.2	1.2	
Services				10.4*
Residential	3.9	3.8	3.6	
Services				
Total	100	100	100	100

Source. Maddison, 2007, p. 54.

* The share of the combination of last four items (government, finance, personal services, and residential services) in GDP was 10.4% in 1952.

The share of the handicrafts, which was a primarily rural sector, remained constant between 1890 and 1952, comprising slightly over 7% of the GDP. As I mentioned above, since the returns to handicraft production were greater than the wage of farm workers but much lower than returns to household farming, rural handicrafts were unable to cover the loss of agricultural income of the households. Table 47 also demonstrates that the modern sectors (combining modern manufacturing, mining, electricity generation, modern transport and communications) increased from almost nil in 1890 to 5.3% of GDP in 1933 and then to 10.4% of GDP in 1952. This shows that under the impact of foreign direct investment and the development of an indigenous bourgeoisie, modern industrialization gained considerable pace in the first half of the 20th century. However, compared to the trajectory of the Western countries, Japan, and the aggressively industrializing economy of the Soviet Union, this expansion of the modern sectors of the Chinese economy was too little and too late. By the early 1950s, China resembled India in terms of its stark poverty (in fact, it was poorer than India in per capita terms) and huge distance from the advanced economies of the West and Japan and rapidly developing Russia. Additionally, modern sectors were concentrated in a few urban metropolises of the coastal China and largely isolated from the countryside of the interior provinces. As a result, farm mechanization and the use of modern agricultural inputs remained negligible. Finally, due to the same reason urban-rural industrial linkages were negligible and prevented the rural industries to shift

from handicrafts to modern small- and medium-scale manufacturing. In short, rural China was extremely poor by the time the Chinese Communist Party took power.

The Rationale of Rural Collectivization

This chapter has analyzed the fundamental characteristics of China's rural economy in the imperial and republican periods, main factors behind its reach of the highest level in the 18th century, and the disastrous decline in the following 150 years. We have seen that unequal land distribution with dispersed cultivation was the most fundamental characteristic of China's rural economy in the entire prerevolutionary period. Despite the changes in the degree of land concentration over time, a significant portion of farmland remained landlords' property. Tenants who combine their small pieces with the land rented from landlords comprised the majority of the rural population. Rapid demographic growth over the long history of China, and especially since the beginning of the 18th century, decreased the per capita availability of farmland. Combined with the tradition of partible inheritance, this demographic pressure made small-scale and fragmented landownership the general rule in rural China. Subsequent dynasties and peasant generations responded to this huge challenge by reclaiming more land in the frontier regions, expanding the hydraulic infrastructure, adopting increasingly sophisticated labor-intensive farming methods and techniques, and developing handicraft production. Following each major crisis and decline, China's rural economy reconstructed itself on this basis and reached a higher level than its previous peak. Prerevolutionary rural China reached its highest level in the 18th century. By combining its fiscal resources with the mobilization of labor and financial resources of the rural population, the Qing state built a strong hydraulic system, which enabled the intensification of farming. Moreover, under the pressure of the peasant

movements that brought the Ming era to an end, the Qing rulers reduced the rents and expanded the rights of the tenants and other lower classes. Since it had neither the intention nor the capacity to tax agriculture effectively, tax burden over the peasantry also decreased. As a result of these factors, land productivity reached a record level by the late 18th and early 19th century. The quality and quantity of rural industrial production also reached a very high level and made China one of the most competitive industrial economies of the world in the 18th century.

However, since the country already acquired a high demographic level in the previous centuries (population decline during the Ming-Qing transition was only a temporary reversal within this long-term historical trend) and population grew rapidly in the 18th century, these significant advances in output was not enough to increase the per capita output. In the absence of a strong check to population growth and a massive transfer of the labor force to non-farm activities, even a strong growth process like the one that happened in the 18th century was unable to reverse this process. More importantly, the trend of high growth of total output with stagnant per capita output could continue without a terminal crisis only if the land frontier remained unexhausted. Hence, as the land frontier was largely exhausted by the end of the century, keeping things as before became impossible.

On the other hand, had China lived in isolation from other world regions, dealing with these problems might be easier. However, China never lived in complete isolation and as capitalism became a world system by integrating different parts of the world more tightly than before through trade and warfare, external developments started to affect China more deeply. As the rising Western states and Japan defeated the Qing army in a series of wars

and turned an increasingly larger part of the Chinese territory into their sphere of influence from 1840s onwards, problems of China's rural economy worsened and became harder to solve. The Qing and the Republican regimes failed to deal with the mounting internal and external challenges effectively for several reasons. First, in continuation of the hydraulic cycles of the long history of China, as soon as the agricultural economy recovered in the early to mid-18th century, the landed elite, by mobilizing their tenants, started to limit the state's capacity to control land, labor, and financial resources of the rural population and implement long-term regional development plans in the countryside. This brought the hydraulic development to a standstill. The state also failed to survey and tax newly reclaimed lands. Local officials became increasingly incapable to control the environmentally unsound practices of the local populations such as excessive land reclamation and damaging the dikes and flooding the land of other households, villages, and counties in order to protect their own land. In fact, in parallel to the expansion of the sphere of political influence of the landed elites, officials also became part of the local power blocs that pursue the competing short-term interests of one locality against the other. As a result, the hydraulic infrastructure weakened and took an increasingly heavier toll from agriculture and the tax revenue of the state. Second, soaring military costs and war indemnities increased the burden on the already limited fiscal power of the state. The Qing state's budgetary surplus was wiped out and increasingly higher deficits became the rule. Given the state's loss of capacity of mobilizing labor and capital of the local populations, budget deficits left the hydraulic infrastructure even more underfunded and weakened.

Third, in parallel with these developments, the central state could not install an effective system of agricultural taxation. Rather than enabling the state machinery to reach

and tax the rural population directly, all attempts towards rational taxation ended up strengthening the taxation power of the intermediaries. As a result, although the tax burden over the ordinary peasantry increased considerably, the tax revenue of the state remained limited. Hence, in stark contrast to what happened in England, Japan, and Russia, Chinese state failed to channel agricultural surplus into industrial capital through taxation and price mechanisms. This failure constrained the development of urban industries, which in turn constrained rural industrialization due to the absence of strong urban-rural industrial linkages that underlined all successful cases of rural industrialization in the modern era. As a result of these factors, China's (rural) economy performed dismally in terms of the growth of both total and per capita output. In terms of per capita income, China became a poorer country than India, which was another poor performer of the same period due to (not entirely but broadly) similar reasons. Ecological degradation, economic decline, increasing loss of national sovereignty, and decline of state power gradually radicalized the peasantry, which, after two decades of armed mobilization, brought the Chinese Communist Party to power and founded the People's Republic of China on 1 October 1949.

We can now explain the rationale for rural collectivization based on our historical analysis. I will briefly point out to the continuity of the prerevolutionary challenges of the rural economy after the revolution and explain the design of rural collectivization as an organizational fix to these long-term problems.

In order to properly address the question of the continuity of the prerevolutionary challenges after 1950, we first need to assess the magnitude of changes that happened immediately after the revolution. This brings us to the question of land reform, which was one of the main promises of the CCP leadership to the peasantry that brought it to power.

Land reform brought profound changes to the agrarian class structure and rural livelihoods. Between 1947 and 1952, approximately 700 *mu* (115 million acres) of land, comprising approximately 30% of cultivable land in the country at the time (Zweig, 1989, p. 122), were distributed to landless and land-poor peasants for free (Lu, 1992, p. 21).¹⁴⁵ Furthermore, land rent, through which peasants were transferring approximately 350 billion kilograms of grain annually to landlords during the decades preceding the revolution (Lu, 2002, p. 109), was largely eliminated. Moneylending was allowed, but usurious interest rates were prohibited (Meisner, 1977, p. 109). These redistributive reforms led to the reduction of income inequality in the countryside.¹⁴⁶

A demographic expansion followed these positive changes in the economic position of the peasants. Rural population rose at an annual rate of 2%, from 470 million in 1949 to 530 million in 1956. In the same period, the number of households rose even faster, with an annual rate of 3%, from 100 to 122 million (Lu, 1992, p. 57). By continuing the long-term trend of increasing population pressure on land, post-revolutionary demographic expansion decreased the (already very low) per capita availability of farmland further. In 1952, arable land per capita and per villager was 0.19 hectare and 0.62 hectare, respectively (Riskin, 1984, p. 4). Land fragmentation also continued. In striking similarity to the household behavior of distributing equal quality of land to married sons in the

¹⁴⁵ Lu Xueyi (2002, p. 109) states that 700 million *mu* of land were distributed between 1950 and 1952. In reality, however, it was distributed between 1947 and 1952. This is not a mere detail. Periodization is important to assess the different dynamics of land reform in the North and South. As Esherick (1981, p. 400) notes, it was the confiscation of the land of the rich peasants, not of the landlords, in North China (a substantial part of it took place before 1950) “that raised the amount of redistributed land to something close to 700 million *mu*.”

¹⁴⁶ The Gini coefficient data of the period is not very reliable but available estimates show a significant reduction of inequality. Buck estimated a Gini coefficient of 0.33 for *per capita income* for 1929-33 and the National Land Commission Survey estimated a Gini coefficient of 0.44 for *household income* in 1934. Li estimated the Gini coefficient of 0.22 for *per capita income* for 1951-52 (Bramall, 2004, pp. 110-111). In short, a significant degree of social leveling took place due to the land reform of 1947-52.

prerevolutionary era, revolutionary land reform policy was also highly concerned with distributing equal quality of land to households. Hence, peasants were given different qualities of land scattered in different parts of the village. This further intensified the nationwide problem of land fragmentation.¹⁴⁷ In brief, land reform decreased land inequality significantly, but left small-scale, fragmented ownership and dispersed cultivation, leaving fundamental characteristics of the old agrarian structure, largely unchanged.

The magnitude of the challenges facing the revolutionary party-state become more visible in the light of these important continuities. In order to reverse the decline of the rural economy and end the poverty of half a billion peasants, the revolutionary state had to accomplish several tasks simultaneously. First of all, since the limited fiscal resources it inherited were insufficient to significantly reverse the hydraulic decline, develop other kinds of rural infrastructure, and boost human capital, the state had to acquire the capacity to mobilize land, labor, and financial resources of the rural population for these purposes. This sort of mobilization capacity underlined successful periods of economic development in the long history of rural China. However, the existing challenges also required an organizational *innovation* for two main reasons. Firstly, in stark contrast to the circumstances of the 15th and 18th centuries, overcoming the constraints of the agrarian economy could no longer be accomplished by merely expanding the land frontier. There was limited scope for land reclamation and as we will see in the next section, creating new

¹⁴⁷ “In some areas of South China where tenant farms were relatively large and tenant rights relatively secure, land reform sometimes actually resulted in smaller and less efficient farms and owner cultivators less well off than they had been before as tenant farmers” (Meisner, 1977, p. 110). Similarly, in Guanzhong Plain of Shaanxi province, few existing large holdings were dissolved, tiny farms were created, and the overall problem of land fragmentation was aggravated by the land reform in 1950-51 (Vermeer, 1988, p. 170).

farmland after 1950 demanded a greater collective effort than before. Therefore, in order to increase land and labor productivity on the existing farmland, a massive expansion and improvement of the hydraulic infrastructure was needed. The frequency and intensity of the floods and droughts had to be reduced to a minimum level with stronger dikes and irrigated acreage had to be greatly expanded. A massive effort was also required in order to reverse the long-term trend of deforestation.¹⁴⁸

On the other hand, given the continuously increasing population pressure on land, increasing land productivity by accomplishing these tasks would hardly suffice to increase labor productivity in agriculture difficult. Farm mechanization and rural industrialization were absolutely necessary to do it. On the other hand, we should also take the phasing of agricultural work into account in order to understand the rationality of farm mechanization in the China's specific context. Similar to other world regions, the timing of the start and end of each cropping cycle was a crucial determinant of land productivity. For instance, the experiments in Zhejiang province in 1958 showed that the date of transplanting rice impacts the rice yield significantly. It showed that while transplanting rice on July 20 usually gives a yield of 500 catties per mu of land, transplanting on July 30 gives 400 catties, on August 5 gives 300 catties, and on August 10 gives 200 catties of rice yield. This explains why Chinese peasants had always paid great attention to traditional agricultural calendar and worked hard to complete each farming task for over centuries. In order to increase the cropping index by squeezing successive harvests into the frost-free

¹⁴⁸ The CCP leadership was clearly aware of the need to counter deforestation. In 1955, Mao Zedong stated: "The barren mountains in the north in particular should be forested, and they undoubtedly can be. Do you comrades from the north have courage enough for this? Many places in the south need afforestation too...In a number of years we can see various places in the south and north clothed with greenery. This will benefit agriculture, industry, and all other spheres" (Mao, 1955).

season, the tasks of harvesting the crop, preparing the field, and transplanting the seeds for the next crop had to be completed very quickly. In Guangdong, where favorably mild climatic conditions allow more time to complete these tasks, the time available to do these was 25 to 30 days. In Anhui, Henan, Jiangsu, Jiangxi, and Zhejiang, which had less favorable climatic conditions, a maximum of 15 days was available to farmers for completing these tasks. On top of this, the shortage of farm animals (due to several reasons including the high population pressure on land) made the completion of these tasks even more difficult. In the 1950s, while Guangdong, Sichuan, and Yunnan had adequate number of farm animals, the shortage of livestock did not allow double-cropping in large areas of Henan, Hubei, Hunan, Liaoning, Shandong, Shanxi, and Zhejiang. For these reasons, farm mechanization was the only realistic way to increase the cropping index and raise land and labor productivity in China in the post-1950 era (Kueh, 1995, p. 24; Walker, 1968, pp. 406-437).

Accomplishing these advances required the replacement of small-scale and dispersed cultivation that dominated China's agrarian structure (before and after the land reform) with a new, large-scale production organization. Furthermore, in contrast to the previous Chinese regimes whose mobilization capacity had always been ephemeral as shown by repeated (B) phases of decline, the new revolutionary regime aimed to establish a new type of rural organization that was capable of overcoming this cyclical pattern and preventing repeated declines. Since rural China's historical experience showed that private sector often obstructed the long-term regional planning and implementation capacities of the state by dictating its short-term and particularistic interests, the new revolutionary state had to avoid founding the new rural organizations on the basis of state-private sector

cooperation. More importantly, as the party central committee recognized in 1958, capital construction in agriculture required “a large-scale cooperation which cuts across the boundaries between cooperatives, townships, and counties” (CCP Central Committee [1958] 1979, p. 402). This could be achieved with a new type of rural organization that was capable of providing a large amount of unpaid/underpaid collective labor and financial resources to develop and maintain the rural infrastructure that are located not only in the vicinity of the villages (hence, serving them immediately) but also in regions distant from them (serving the general interests without necessarily serving local interests immediately).

Rural China had a large surplus rural labor in the early 1950s, which could potentially meet these demands. Average annual days of employment were 119 between 1950 and 1954 (Schran, 1969, p. 75). John Buck’s national survey of 1929-31 showed that the idle time of able-bodied rural males was concentrated in the agricultural slack season in December, January, and February. During this season a typical rural male was idle for about 40 days (Buck, 1937, p. 196; Bramall, 2009, p. 224; Rawski, 1979, p. 74). Furthermore, as the data on the first half of the 1950s (Schran, 1969, p. 75) shows, there was not any visible drop in the overall degree of underemployment after the land reform since alternative employment opportunities remained quite limited. In complete parallel with the specific line within the development theory of the post-WWII period that highlighted the significant potential of the mobilization of the underemployed rural labor force for the inexpensive development of rural infrastructure in less developed countries (Myrdal, [1968] 1977; Nurkse, [1952] 1967), the CCP leadership had a firm belief in the potential for the mobilization of surplus labor in rural China. As Mao Zedong stated,

Things in this county also show us that an outlet can be found in the villages for rural surplus labour-power. As management improves and the scope of production expands, every able-bodied man and woman can put in more work-days in the year. Instead of over

one hundred work-days for a man and a few score for a woman as described in this article, the former can put in well over two hundred work-days and the latter well over one hundred or more (Mao, 1955).

The existence of a sizable surplus labor, however, did not guarantee its successful mobilization because withdrawing workers from households and pooling them for construction work was nearly impossible on the basis of small peasant economy. In confirmation to the historical cases presented in this chapter, Lu Aiguo notes that “while internal family cooperation was able to serve as additional productive forces,” the institutional obstacle posed by small farming “prevented inter-family cooperation that might have helped to create further productive forces” in China in the early 1950s (Lu, 1992, pp. 49-50). It was therefore impossible to coordinate large-scale labor mobilization within circumstances preventing collective action even at the household level. In 1950s China, Patnaik argues:

It was almost impossible to actually release workers for projects as long as the individual holdings are retained; pooling of production [became] a necessary condition for converting the potential surplus into an actual one. This is because labour surplus exist[ed] in units of labour days while workers [were] indivisible and the withdrawal of workers necessarily has to be in discrete units of persons; one cannot withdraw half a worker from a farm” (Patnaik, 1995, pp. 92-93).¹⁴⁹

The new rural organization had to be able to provide the state a high degree of control over the use of the labor force without paying it market wages (He, 2007; Lao, 2006; Patnaik, 2006). Furthermore, since the Qing and the Republican regimes’ lack of control over land due to the successful resistance of the private sector contributed to the

¹⁴⁹ Patnaik explains this point with this example: “Suppose that 30 farms...continue to operate separately, then releasing 24 ‘surplus’ workers means taking away not four-fifths of a worker from each of the 30 farms, which is impossible, but taking away one worker each from 24 farms. This at once means that there will be a farm specific labour shortage; the required labour input per farm of 300 days on these 24 farms can no longer be put in by the remaining single worker without overworking and violating the work norm; labour would have to be hired, obviously from the other 6 farms from which no one has been withdrawn, but no matter how underemployed the workers on the other 6 farms might be they would not work free for another farmer and wages would have to be paid. For the workers remaining behind to work harder, as well as to maintain the withdrawn worker out of farm net output, and additionally pay out wages, would not be a rational outcome” (Patnaik, 1995, pp. 92-93).

failure of their efforts to prevent excessive land reclamation and obtain land for hydraulic construction, the new rural organization should do the opposite and give the state a high degree of control over land. For all these reasons, putting an end to the private character of the rural economy appeared not only a derivative of the party-state's egalitarian ideology but also a developmental imperative.

Also, since the private sector proved itself largely incapable of financing rapid industrialization in the cities as well as the countryside, the state had to assume this task on its own. Generating development finance remained quite challenging for the PRC for three reasons. Firstly, although the post-1950 geopolitics was more favorable to China than the geopolitics of the post-1839 period, as the PRC engaged in contentious relations with the United States, Soviet Union, and India in (different periods of) the Cold War, military spending comprised a large part of the budget and left limited funds for economic development. Secondly, although the Soviet Union's assistance was helpful in the 1950s, China had neither the inclination nor the opportunity to receive much foreign assistance in the post-1960 period.

Finally, boosting investable savings required controlling consumption of the rural population. Given the fact that the total amount of land rent and usury interest obtained by landlords (and used largely for unproductive purposes) was equal to 13.5% of the GDP in 1933,¹⁵⁰ the potential for boosting the savings rate increased after the land reform.

¹⁵⁰ Victor Lippit found that the total monetary value of the transfers from poor peasants and agricultural workers to landlords and rich peasants was equal to (at least) 16.9% of the national income in the pre-revolutionary period. It had three main components: land rent (10.7%), rural interest payments (2.8%), and "the surplus or net value added by full-time hired labor above and beyond its wages" (3.4%) (Lippit, 1974, p. 68). Lippit views this 16.9% as the minimum net contribution of land reform to development finance. I disagree with Lippit's inclusion of the surplus value produced by farm workers in the total contribution of land reform. By distributing land to former agricultural workers, land reform of 1947-52 might have decreased the pressure and degree of proletarianization of the peasantry and therefore reduced the share of the agrarian capitalist profit in national income to a lower level. However, we should keep in mind the fact

However, the end of high land rents and interest rates increased the average household income by only 55 ¥. As long as family farming remained the dominant form of production, this additional income, even if all of it was invested in production, was obviously insufficient to improve the productive capacity much. Moreover, since income redistribution in a poor economy tends to increase the share of consumption at the expense of investment, there was no reason to assume that this modest addition to household income would lead to increasing productive investment. In order to raise the productive investment in the (urban and rural) economy significantly, the state had to pool a large part of this modest and easily consumable additional income from the households through a system of forced savings (Bramall, 2004, p. 109; Nurkse, 1967, pp. 38-44; Patnaik, 1995, p. 90).

As we have examined, this could be possible through taxation and using the price mechanism. For effective taxation, the state had to be able to reach the villages and the product of the peasants directly. However, it did not have the financial resources to hire a large tax collecting bureaucracy to accomplish this task. Hence, the new rural organization should be capable of fulfilling all fundamental tasks of a tax collecting bureaucracy but *without* adding many people to the government payroll. Similarly, in order to use the price mechanism effectively to industry's favor, the state had to control the product of the peasants and limit the private and/or illegal channels of commerce. While the monopolization of agricultural trade in 1953 provided the legal means to do so, rural collectivization supplied the necessary organizational means through which the state could

that the land reform did not have an anti-capitalist character and hiring farm workers was not prohibited. Hence, there is no reason to count the capitalist profit within the total contribution of land reform to development finance. I therefore present the combined share of land rent and interest payments as the financial contribution of land reform, which comprised (at least) 13.5% of China's national income in the early 1950s. On the other hand, since it does not account for the illegal taxes and traders' commissions, this figure obviously underestimates the real amount of transfers to the exploiting classes of feudal (but *not* capitalist) character (Patnaik, 1995, p. 89).

access the agricultural surplus while avoiding having to employ a large number of officials.¹⁵¹

Clearly, all these tasks demanded nothing less than a herculean effort and sacrifice from the peasantry. Only a very hegemonic political ideology could motivate and mobilize them for such demanding tasks without providing much in the way of immediate material gains. It was extremely difficult, if not altogether impossible, to generate this sort of ideological and political atmosphere within a private economic system. Hence, as the party-state attempted to play this hegemonic role by its ambitious socialist developmentalism, rural collectivization was established as the organizational structure to put all these ambitious goals into practice.

¹⁵¹ The need to reduce the cost of tax collection invites us to recognize the historical parallels between the *baojia* and *lijia* systems of imperial China and the rural collectives of the Mao era. By grouping households under larger and fewer units, *baojia* and *lijia* systems targeted to reduce the transaction costs of administrative activities (Duara, 1988, pp. 206-207; Rowe, 2009, pp. 52-55). Rural collectives played a similar role: “an enlargement of the scale of production units, say, by 100 households into a cooperative...would by itself cut the problem of tax collection to 1 per cent and allow the fiscal potential of this sector to be tapped” (Patnaik, 1995, p. 90). This saved the PRC from the costs of employing many tax collectors, which might reduce or even cancel out the potential fiscal benefits of agricultural taxation.

APPENDIX B: INDIA'S RURAL ECONOMY BEFORE 1947

In this chapter, I will focus on the fundamental problems of India's rural economy in the colonial era (1757-1947) in order to make a proper assessment of the challenges in front of it at the beginning of the post-colonial period. This analysis will help us to evaluate India's rural economic performance and compare it to China's between 1950 and 1990. In the previous chapters, I have argued that the development of rural economy has generally been based on three fundamental transformations: a. the production of an increasing amount of agricultural surplus by developing agricultural infrastructure, technology, and skills and, b. developing human capital (creating a healthy and relatively educated and skilled labor force), and c. establishing a modern rural industry by investing the agricultural surplus and employing the relatively skilled labor force. We have seen that the transfer of the agricultural surplus of their colonies helped *some* of the Western countries and Japan to partially externalize their burden of capital accumulation (i.e., the generation of development finance). However, countries like China and India (which did not have colonies and/or were colonized/semi-colonized) lacked this opportunity of externalization and therefore had to struggle with the challenge of increasing the agricultural surplus, developing human capital, and industrialization mostly *internally*, through their own efforts. Hence, similar to Appendix A, which focused on the initial conditions in rural China, this appendix analyzes the initial conditions in rural India by 1950 by following a simple, three-sided framework based on the production of agricultural surplus, development of human capital, and rural industrialization.

This appendix argues that despite its significant differences (such as complete colonization, greater ethno-linguistic diversity, and the caste system), by 1950 the fundamental problems of India's rural economy were quite similar to those in China. In the great majority of India, agricultural surplus remained very limited due to underdevelopment of the agricultural infrastructure, technology, and skills. Capital investment in agriculture remained very low until the mid-19th century. It increased significantly from the 1860s on, but since the state continued to have limited fiscal power and was incapable of mobilizing labor and financial sources of the rural population as a way to compensate for its lack of access to capital, even the increased public investment continued to be insufficient to develop agricultural infrastructure.

The industrialization of the countryside was also severely constrained. As India opened its market to cheap British textiles, native handicrafts declined until the mid-19th century. The insufficiency of agricultural surplus limited industrial investment. Limited fiscal power of the state put a formidable obstacle to rural electrification and thereby ruled out the establishment of a modern rural industry. Rural education and healthcare remained dismally weak due to capital scarcity. Although a native industrial bourgeoisie emerged in the cities in the 19th and 20th centuries, it remained weak due to the small size of the agricultural surplus and weakness of human capital. Hence, urban-rural industrial linkages (through subcontracting chains), which are crucial for developing rural industry, remained insufficient. Also, since investing in rural industry did not appear sufficiently more profitable than unproductive activities such as rent and interest collection, big landowners and rich peasants generally tended to stay away from industry. We will see that in the first half of the 20th century, industrial development was limited to a few rural regions capable

of generating an investable agricultural surplus (such as Punjab) or whose industries were protected and supported by the native rulers.

This appendix is composed of six sections. The second section introduces the general characteristics of India's rural economy before 1947 including small and fragmented farms, concentrated ownership with dispersed cultivation, the caste system, the existence of a sizeable amount of surplus labor, surplus transfer to the landed elite in the form of rent and interest, and the resulting strong tendency of focusing on unproductive activities at the expense of productive ones. The third section provides a synopsis of the productive advances in India's agrarian economy from ancient times until 1947. It investigates the development of hydraulic infrastructure with a specific focus on the significant advances made during the century preceding Indian independence. This account will demonstrate that although the irrigation capacity of pre-colonial India appears less impressive than that of imperial China, the gap between the two was rapidly bridged after the mid-19th century due to China's decline and British India's advances in hydraulic development. The fourth section examines the major constraints on the development of India's rural economy including the diminishing availability of natural resources, weak infrastructure (despite its hydraulic advances), underdeveloped human capital, and capital scarcity due to the declining effectiveness of agricultural taxation. Focusing on two main hydraulic projects in east India, it will analyze the relationship between these constraints and the state's lack of capacity to penetrate into the countryside and mobilize the peasantry. The first case, the large-scale embankment project in the Orissa Delta in the late 19th century, will reveal the causes of the colonial state's failure to share the costs of hydraulic construction with the local population through labor mobilization and self-finance. The

second case, the private canal system in south Bihar in the late 19th and early 20th century, will analyze the factors behind the decline of previously successful elite-led labor mobilization in hydraulic construction. The fifth section briefly assesses the performance of India's rural economy in the first half of the 20th century in the light of these discussions.

General Characteristics of India's Rural Economy before 1947

A brief analysis of the general characteristics of India's rural economy is necessary for understanding its development trajectory before (and initial conditions by) 1947. These characteristics include small and fragmented farms, concentrated ownership with dispersed cultivation, caste system, the existence of a sizeable surplus pool of labor, surplus transfer to the landlord class in the form of rent and loan interest, and the resulting strong tendency of prioritizing unproductive activities over the productive ones.

Small and fragmented farms

Declining per capita land availability due to increasing population pressure was the defining characteristic of India's rural economy in both the pre-colonial and colonial periods. The population of undivided India (comprising the contemporary Bangladesh, India, and Pakistan) was almost 150 million in 1600 and 200 million in 1800 (Habib, 1982, p. 167). It rose to 284.5 million in 1900 and 410.4 million in 1946.¹⁵² After the partition of Pakistan (which comprised the territories of contemporary Bangladesh and Pakistan) in 1947, India's population was 350 million (Maddison, [2003] 2006, p. 203). In short, India had been the second most populous world region (after China) over centuries. About 85% of India's population lived in the villages in the 17th and 18th centuries. This did not change

¹⁵² Burma was part of the British India between 1886 and 1937. Hence, the figure for 1900 also includes Burma's small population.

much in later periods. The share of the rural population within India's total population was 82.7% in 1951 (Panigrahy, 2006, p. 43). The number of villages did not increase much and the average village population rose continuously over centuries. The rural population's growing land hunger led to significant expansion of the land frontier over time. For instance, in North India cultivated area in 1600 was about 60% of that of 1900 (Habib, 1982, pp. 164, 169-170). The increasing expansion of the land frontier was not enough to reverse the decline in the scale of agricultural production *at least* since 17th century. The statistical data of the early 1950s reveal the consequences of this long-term process. Per capita agricultural land in rural India was 0.638 ha in 1951 (Indiastat Database, 2014) and average farm size was 3.03 ha in 1952 (GOI, Ministry of Labour, 1955, Appendix VII, p. f).

In addition to the continuous decline in the scale of production, smallholdings were also fragmented significantly due to three main reasons. First, increasing population pressure pushed the break up of the previously undivided holdings. Second, partible inheritance sanctioned by the Hindu and Islamic legal systems reinforced the subdivision of land. Finally, the concern to divide equal quality of land to male heirs supported the fragmentation of family farms into separate pieces. Variation of the quality of land was significant in many Indian villages, which had continuously created a demand for better quality land among different households as well as the male heirs of the same households. These were general phenomena in both the rising and declining agricultural regions. In regions having weak irrigation infrastructure and few commercial opportunities, villagers and male heirs of each household competed for land of better quality and limited availability in order to protect themselves from subsistence crises. In rising agricultural

regions with stronger irrigation infrastructure and greater commercial opportunities, villagers and male heirs competed for the best quality land in order to get richer.¹⁵³ Landholdings were increasingly fragmented all over India due to these conditions (Charlesworth, 1983). During the first two decades of the 20th century, an average household farm was divided into 3 to 5 parcels in Gujarat, Deccan Plateau (comprising large areas of central and southern India), Karnataka, and Konkan (comprising the coastal areas of Maharashtra and Goa). In Punjab and Uttar Pradesh, 15 to 20 parcels per landholding was the norm (Heston & Kumar, 1983, p. 210). As we will see below, since fragmentation could emerge in places of both agricultural dynamism and stagnation, the success of the land consolidation efforts of the 20th century depended heavily on the intensity and quality of the local efforts rather than any objective economic criteria or law.

Concentrated ownership with dispersed cultivation

Although small and fragmented farms produced the great majority of agricultural output, rural landownership was highly concentrated in India. We will examine below the *zamindari* and *raiyyati* systems of land taxation in the pre-colonial and colonial periods. Big landowners (of different types and sizes) owned the majority of farmland under both systems. A sizeable part of the rural population had already been separated from the means of production before the arrival of the British. For instance, landless farm workers comprised at least 17% of the rural population in the Madras Presidency in the early 19th century (Alaev, 1982, p. 229). The lowest-caste people (known as the Dalits or

¹⁵³ For instance, in Kamthadi village in the Poona district of Maharashtra (where infrastructure and commercial opportunities were relatively developed), “each of the brothers [was insisting] on having every superior or inferior patch exactly equally divided amongst them.” On the other hand, in Bilaspur, Raipur, and Drug districts of Chhattisgarh (where infrastructure and commercial opportunities were very limited), land fragmentation was a result of the egalitarian tradition of periodic land circulation among the villagers in order to guarantee that each household had access to roughly similar quality of land to shield itself from the risk of famine and hunger (Charlesworth, 1983, p. 198).

Untouchables) comprised a sizeable portion of the rural proletariat. The majority of the remaining villagers were also poor. Land-poor and landless peasants (of non-Dalit origin) comprised somewhere between 20% and 50% of the total village population in India in the 18th century. They depended on landlords to access farmland through various types of tenancy arrangements and also often worked on the farms of big landowners and rich peasants (Rao, 2002, p. 154). Despite significant regional variation, this class structure marked by high land inequality remained dominant in large parts of rural India under the rule of the Mughal,¹⁵⁴ Maratha,¹⁵⁵ and Vijayanagara¹⁵⁶ empires, various kingdoms and principalities, and the British (Byres, 2002; Habib, [1963] 1999; Rao, 2002; Raychaudhuri, 1983).

Independent India inherited this unequal land distribution. In 1952, farm workers comprised 30.4% of all rural families in India and half of them were completely landless (GOI, Ministry of Labour, 1955, Appendix VII, p. e). As Table 48 demonstrates, while 53.54% of the peasants controlled only 16.69% of total operated area, a tiny minority comprising 2.04% of the rural population controlled 14.44% of the total farmed area. Table 48 also confirms the small scale of agricultural production in India shortly after independence. 75% of the peasants had landholdings less than 4.04 ha.

Table 48 Land Distribution in Rural India in 1954 and 1955

Size of holdings (Acres)	Agricultural population (Million)	Total operated area (1000 Acres)
0-5	139 (53.54%)	58,497 (16.69%)
5-10	56.7 (21.84%)	68,813 (19.64%)

¹⁵⁴ The Mughal Empire emerged as a major power in the Indian subcontinent after its founder Babur's victory in the Battle of Panipat in 1526. It ruled the majority of India until the late 17th century. Following successive defeats by the Marathas, the Mughals lost much of their territory to various local kingdoms and princely states. They became completely subordinated to the British in 1818 and formally dissolved after the Mutiny in 1857.

¹⁵⁵ The Maratha Empire ruled large tracts in north and central India in the 17th and 18th centuries.

¹⁵⁶ The Vijayanagara Empire ruled South India between 1336 and 1646.

10-15	22.5 (8.66%)	44,210 (12.61%)
15-20	14.4 (5.54%)	37,568 (10.72%)
20-25	7.9 (3.04%)	24,594 (7.02%)
25-30	5.6 (2.15%)	21,369 (6.09%)
30-40	5.4 (2.08%)	27,566 (7.86%)
40-50	2.8 (1.07%)	17,198 (4.90%)
50 and above	5.3 (2.04%)	50,600 (14.44%)

Source. The National Sample Survey, July 1954-March 1955, cited in Narain, 1961, p. 39.

Note. The source provides the data of agricultural population for both 1950-51 and 1952-53 and I have used the latter on the table due to its proximity to the time of the survey.

Labor hiring by small and medium peasants was not uncommon in both the pre-colonial and colonial periods. However, this was mostly restricted to busy agricultural seasons (Narain, 1961, p. 16). There were also landlords who set up large farms employing wage (and bounded) labor. However, this tendency towards capitalist agriculture was insignificant until the mid-19th century when the British capital flows back to India resulted in the establishment of plantations in several regions. Advances in agricultural infrastructure and technology in the same period also encouraged the landowners and rich peasants to take the same road in the relatively advanced regions. However, setting up large capitalist farms seemed risky and unprofitable to the majority of the Indian rural elite due to weak infrastructure, capital scarcity, and low human capital. Hence, large farms employing wage labor continued to play an insignificant role in Indian agriculture before 1947 (Bagchi, 1972, p. 200; Byres, 2002, p. 256). In sum, as in pre-1949 China, concentrated ownership co-existed with the dominance of small, fragmented, and undercapitalized farms until the early 1950s.

Caste system and rural production

Caste had always occupied an important place in the social stratification and class differentiation in rural India. Thousands of castes and sub-castes in India have been grouped broadly under five main categories. From a descending order, the caste hierarchy

comprised the Brahmins (priests and intellectuals), Kshatriyas (nobles, rulers, and warriors), Vaisyas (artisans, farmers, and merchants), Shudras (unskilled laborers doing menial jobs), and the Dalits, who have been outside the formal caste hierarchy and the lowest-status group in the Indian society. Dalits have been employed in the hardest, dirtiest, and lowest-paying jobs. Although this hierarchy, in which the Brahmins remain at the top, generally holds true for rural India, non-Brahmin castes controlled much of India's rural economy.

Caste hierarchy deeply impacted the class hierarchy in rural India. Unequal land ownership had been closely related to caste. In the pre-colonial and colonial eras, village populations generally comprised a dominant caste having control over village land, a hierarchy of subordinate castes having varied degrees of access to land, and the lower caste groups (in which Dalits usually had a large share) who were landless and depended on farm employment. Wage labor existed in Indian agriculture from the time immemorial. On the other hand, the employment relationship between the low-caste laborers and higher caste farmers had often taken non-wage forms, including various types of bonded-labor and even forms of slavery (Bagchi, 2010, pp. xix, 32-33; Rao, 2002, pp. 152-153).

The caste structure had also deeply impacted the organization of rural industry. Extreme levels of division/specialization of industrial labor associated with the caste/sub-caste status of the workers had continued over centuries. Hereditary skills transmitted over generations generated high levels of industrial specialization. As a Dutch visitor of Agra, the capital of the Mughal Empire at the time, commented: "a job which one man would do in Holland...passes through four men's hands before it is finished." This caste-based industrial structure was also dominant in the countryside (Raychaudhuri, 1983, p. 20).

The existence of a sizeable surplus labor

Surplus labor and its mobilization for rural economic development is the one of the central themes of this study. The non-farm sector's incapability of absorbing India's growing labor force had made underemployment and unemployment permanent problems of the Indian countryside for centuries and especially in the first half of the 20th century, during which the pace of employment creation was much slower than the pace of population growth. The Agricultural Labor Enquiry of 1950-51 found that on average workers in rural India (including both landed and landless workers) were unemployed for 98 days per year. The average number of self-employed days per annum was 49. The same enquiry suggested that a portion of these days belonged to the category of disguised unemployment (or underemployment) (GOI, Ministry of Labour, 1951, p. 44). It is important to emphasize the seasonality of rural unemployment and underemployment. Labor shortage was a prevailing condition during the main agricultural seasons while labor surplus was the rule of the agricultural slack season (Khan, 1961, pp. 149-150).

Table 49 Wage Employment, Self-employment, and Unemployment of Male Workers in Rural India, 1950-51 (Days Per Year)

Region	Wage Employment			Self-employment	Unemployment
	Agricultural	Non-agricultural	Total		
North	255	34	289	26	50
Uttar Pradesh	255	34	289	26	50
South	160	21	181	71	113
Madras	159	19	178	68	119
Mysore	130	24	154	131	80
Travancore & Cochin	185	30	215	35	115
Central	221	24	245	45	75
Madhya Pradesh	239	16	255	41	69
Madhya Bharat	173	48	221	47	97
Hyderabad	212	23	235	50	80
East	182	42	224	49	92
Assam	208	48	256	34	75

Bihar	167	33	200	58	107
Orissa	199	57	256	51	58
West Bengal	200	46	246	32	87
West	176	20	196	46	123
Bombay	173	20	193	54	118
Northwest	177	25	202	64	99
Rajasthan	162	22	184	82	99
Punjab	164	24	188	59	118
PEPSU	273	8	281	25	59
All-India	189	29	218	49	98

Source. Government of India, Ministry of Labour, 1955, p. 20, 43.

Note. Mysore was renamed as Karnataka in 1956. Madhya Bharat merged with Madhya Pradesh in the same year. Travancore and Cochin are parts of contemporary Kerala. The majority of the areas in Patiala and East Punjab States Union (PEPSU) are located in contemporary Punjab. Some parts of it are located in contemporary Haryana and Himachal Pradesh.

On the other hand, since these figures are about male workers, they do not reveal the full extent of the rural employment problem. As Table 49 demonstrates, in the same period female workers were employed for only 134 days per year. The survey does not give any data about female self-employment. However, it would be unrealistic to expect it to be very high to the extent of bridging the male-female employment gap. Hence, female unemployment and underemployment was probably higher than male unemployment.

Table 50 Wage Employment of Female Workers in Rural India, 1950-51

Region	Agricultural	Non-agricultural	Total
North	119	24	143
Uttar Pradesh	119	24	143
South	132	7	139
Madras	134	6	140
Mysore	120	10	130
Travancore & Cochin	133	14	147
Central	125	16	141
Madhya Pradesh	112	10	122
Madhya Bharat	108	23	131
Hyderabad	141	18	159
East	99	24	123
Assam	136	19	155
Bihar	91	20	111

Orissa	113	37	150
West Bengal	152	36	188
West	103	13	116
Bombay	102	11	113
Saurashtra	107	22	129
Northwest	98	17	115
Rajasthan	113	12	125
Punjab	35	29	64
PEPSU	50	1	51
All-India	120	14	134

Source. Government of India, Ministry of Labour, 1955, pp. 31-32.

In sum, the non-farm economy's incapability of absorbing the growing population created a huge surplus rural labor in India. Similar to China, there was significant scope to transform this surplus labor into capital by mobilizing the unemployment and underemployed people in capital construction projects, especially during the agricultural slack season. Tables 49 and 50 show that large quantities of surplus rural labor existed in all major rural regions in the early 1950s. As we will see below in detail, this was one of the major obstacles to the development of India's rural economy before independence.

Surplus transfer from the peasants to the landed elite

Three main forms of surplus transfer from the peasantry to the state and the propertied classes existed in India before 1947: tax, rent, and interest.

Land tax

Land tax was a major form of surplus transfer during the pre-colonial era. About half of the output was taxed by the Mughal state with the exception of land recently brought under cultivation for which taxes were kept at a lower level in order to encourage land reclamation by landlords and peasants (Habib, 1982, p. 167). The balance of power between the landlords, peasants, and the central state determined the form and amount of surplus appropriated by the landowners. Similar to imperial and republican China, the

central state in pre-colonial India was incapable of penetrating into the countryside directly and completely due to its low fiscal capacity (Rao, 2002, pp. 146-147). At the pinnacle of its power during the Akbar period (1556-1605), the Mughal state tried but failed to replace tax farming with a cash salary system for government officers. During the time of Muhammad Shah (1719-1748), the Mughal central state weakened to the extent that the emperor granted tax farmers the right to collect taxes even in the imperial domains (Raychaudhuri, 1983, p. 12).

The central state's limited capacity to penetrate into the countryside resulted in the emergence of two main land revenue systems in India: the *zamindari* and *raiyyati* (or *ryotwari*) systems. Under the zamindari system (which prevailed in the regions where the state control was at its weakest) the state (generally the high local officials/tax farmers called the *jagirdars*) granted the *zamindars* the right to collect the taxes in specific regions. Zamindars usually appropriated above 10% of the collected revenue and this ratio rose up to 25% in regions like Gujarat (Habib, 1982, p. 167). They also owned large tracts and therefore acted both as landlords and tax farmers simultaneously. There were also innumerable small landlords collecting rents from their land-poor tenants and paying a part of this surplus to the zamindars as land tax. Although it was called by different names and varied in different regions, the general characteristics of the zamindari system were present throughout the subcontinent encompassing large parts of the north, Gujarat, and the Carnatic coast (comprising the contemporary Tamil Nadu, southeastern Karnataka, northeastern Kerala, and southern Andhra Pradesh) before the arrival of the British (Raychaudhuri, 1983, p. 12).

Raiyati or *ryotwari* (peasant proprietorship) system was dominant in other parts of India where the central state was able to contact the villages more directly than it could in the zamindar-held areas. In the raiyati areas, state officials were taxing the tenure holders through the intermediacy of the village headmen. Village headmen were usually made of small landlords belonging to higher castes. In return for their revenue collection service, they received 2.5% of the assessed land of the village or the collected revenue as payment (Byres, 2002, pp. 258-259; Habib, 1963 [1999], p. 141). Hence, although the land revenue was still collected by an intermediary, the raiyati system helped the central state to check the centrifugal forces and increase its tax revenues by bypassing the powerful zamindars.

Although the arrival of the British did not transform these revenue systems, it changed them in important ways. First, the British administration achieved greater success than the previous rulers of India in measuring and recording all cultivated land. Second, the British administration increased the land tax significantly until the mid-19th century. This tax increase took place in tandem with the colonization of India and created important differences in agrarian class structures of East India and the rest of the subcontinent over time. The first region colonized by the British was Greater Bengal (comprising today's Bangladesh and Bihar, Orissa, and West Bengal states of India). The defeat of the Nawab of Bengal by the armed forces of the (British) East India Company in the Battle of Plassey in 1757 started the colonization process. Soon after its victory, the company significantly increased its revenue demand from the Bengali zamindars. Revenues collected from the "diwani land" increased from 6.45 million Rupees (Rs hereafter) in 1762-63 to 14.7 million Rs in 1765-66. The total revenue collected in Bengal rose from 22.6 million in 1765-66 to 37 million Rs in 1778-79. This was the British version of post-conquest plunder that had

been observed after all major conquests in world history. Since the zamindars lacked any modern agrarian base capable of meeting this sharp pike in revenue demand, they did not have any other option other than increasing the tax and rent burden over the peasantry. The British plunder reached its physical limits with the disastrous famine of 1769-70, which led to the death of about one-third of all cultivators in Bengal. During this process, the company administration dispossessed many of the local zamindars that failed to pay the demanded taxes. As a result, a large amount of zamindari land was transferred to the outsiders, the majority of whom were the urban merchants and financiers backed financially by the East India Company.¹⁵⁷ Hence, absentee landlords from the cities gained greater control over the rural land in Bengal.

However, this first shock did not destroy the zamindari system. The British soon realized that the destruction of the zamindars through high extraction involved significant economic and political risks. This led to the Permanent Settlement agreement between the East India Company and the Bengali zamindars in 1793. Fixed revenues were agreed upon and the company promised to not to raise them in the future. This helped the zamindars recover rapidly. Between 1800 and 1830, crop prices rose by 50% and the zamindars' profits reached the level of the company's revenues. As a result, the foundations of rentier landlordism became stronger in Bengal.

Landlords of other regions that came under the control of the British in subsequent phases of colonization were not as lucky as their Bengali counterparts. The Mahalwari system that was established in large areas in today's Uttar Pradesh and the modified raiyati system established in the Bombay Presidency did not give similar concessions. In contrast

¹⁵⁷ "This was not, however, a transfer of capital from commerce to land; but really an indirect annexation of that capital by the East India Company" (Habib, 1975, p. 27).

to the permanent settlement in Bengal, only temporary revenue settlements were reached in these areas in the 1830s and 1840s because the British did not want to give up its authority to increase the revenues in tandem with the crop price increases. The land revenue collected in these two regions rose by about 70% (in real prices) during the first half of the 19th century. Similarly, while the prices declined, revenue collections rose substantially in the Madras Presidency during the same period (Habib, 1975, pp. 26-33).

Rent

From the mid-19th century on, the British started to reduce the tax burden of the landlords. However, this did not reduce the rent burden of the small peasants much and only improved the economic power of the big landowners and rich peasants. As we will see below, it also created a formidable obstacle to the transfer of the agricultural surplus to industry. In Orissa, total rent paid by the peasants rose by 59% while landlords' share in the total collected rent increased from 36% to 60% between 1837 and 1897 (Chaudhury, 1991, p. 31). The situation was similar in Bihar. Between 1840 and 1898, rent rate increased by 58% in nineteen villages in Champaran district, by 170% in fifty villages in Darbhanga district, and by 97% in sixty-four villages in Saran district. In 1898, a district official in Muzaffarpur estimated that rent rate doubled during the previous 75 years (Chaudhury, 1983, p. 138). A sample survey of 105 villages in fourteen districts of Bombay Deccan and Karnatak (regions located in Maharashtra and Karnataka state of contemporary India) found that 64% of the cultivated land was under sharecropping in which rents comprised between one-third and one-half of the total produce. 29% of the cultivated area was under cash rental arrangements and average annual cash rent was equal to 5% of the sale price of the land (Fukazawa, 1983, p. 203). On wet areas of the Madras Presidency, rent rates varied

between 18% and 50% of the gross output. In Thanjavur, which was one of the best irrigated regions of India, rent rates were between one-quarter and one-third of the gross output (Kumar, 1983a, pp. 211-212). In 1955, about 24% of the total operated area was leased in/out. Rural residents owned half of this total while the other half belonged to the absentee landlords living in the cities (Narain, 1961, p. 31).

Interest

Rural India had a long tradition of usurious moneylending. All-India Rural Credit Survey of 1955 demonstrated that 55.5% of the total rural debt was used for consumption, repayment of old debts, and other non-productive purposes, 39.85% was used for agricultural production, and 4.6% was used for non-farm production. Given the large share of the consumption loans within total rural credit as late as the mid-1950s, we can estimate that it had a larger share in the previous periods during which the use of modern agricultural inputs and technology was much more limited. Moneylenders usually charged very high interest rates and peasant indebtedness had been a common and constant phenomenon over centuries. Landlords, “agriculturalist moneylenders,” traders and commission agents, and professional moneylenders supplied 76.3% of the total rural credit in 1955 (Author’s calculations based on Reserve Bank of India, 1957, p. 6). Although the report gives the landlords’ share as merely 2.2%, it appears that “agriculturalist moneylenders” (who supplied 33.2% of the total rural credit) comprised a part of the landed elite. The report does not provide data on the land properties of the traders, commission agents, and professional moneylenders but it is not hard to guess that a portion of them belonged to the absentee landowners.

Loan interest became a greater source of surplus transfer from the peasants to landlords than the rent in the late 19th century. In 1931, the Central Banking Enquiry Committee estimated the total agricultural debt in India as 9 million Rs. Since rural credit was largely informal, we should take this as a lower-bound estimate. The government's land revenue at that time was only 350 million Rs. The maximum amount of rent collected by the landlords was six times of the government revenue even in the permanently settled Bengal and was much less than this in other regions. Hence, the annual interest burden over the peasantry was estimated to exceed the rent burden by at least 27.5% (Chaudhury, 1991, p. 51).

The prioritization of the unproductive activities

Appendix A has examined that in a non-private economy, in the absence of an expectation of significantly higher returns from productive activities than unproductive ones (such as rent and interest collection), private capital would not invest in productive activities to any significant degree. This was the case in large parts of rural China before 1949. A similarly formidable rent barrier was present in rural India before 1947 due to the above-mentioned high rent and interest rates. In India's private rural economy, breaking the rent barrier required significant public investment in infrastructure and state support to industry (through subsidies, tax breaks, provision of cheap land, and protection from the competition of the -national and foreign- urban capital). As we will see below, British investment to hydraulic infrastructure gradually created the conditions for greater productive investment in agriculture in several regions. Some of the resulting agricultural surplus was channeled to artisan production. In regions like Gujarat, the continuity of the native rulers in autonomous administrations prevented a complete colonial takeover of the

industrial sector. The native rulers also implemented industrial support policies. Productive investment in agriculture and industry took place in such rural regions.

However, these conditions were generally absent in the vast and heavily populated rural regions of central and eastern India. As a result, unproductive activities such as the collection of high land rent and usurious loan interest remained dominant until independence (Byres, 2002, p. 256; Patnaik, 1986, 1988, 1997). Interestingly, similar to the Chinese case, a shift from productive to unproductive activities was also observed in India. The case of indigo farmers is instructive in this respect. Before the popularization of synthetic German dyes, indigo was one of India's few lucrative export products. This encouraged private capital investment into indigo planting. Large plantations applying greater quantities of fertilizer than small farms were established. However, this tendency proved temporary and incapable of leading to modern capitalist production because large indigo farmers soon perceived renting out their land to small tenants as less risky than establishing modern farms with wage labor. They became "improving zamindars" rather than capitalist entrepreneurs (Bagchi, 1972, p. 200). Furthermore, although landlords and rich peasants received the bulk of the rental and interest income, small and middle peasants also rented out land, supplied loans to others, and tried to switch to unproductive activities as much as possible (Klein, 1973, p. 659). In short, the combination of high rent and interest rates and the absence of sufficient conditions, such as strong infrastructure and government support, significantly constrained the increase of productive investment in rural India before independence.

The Development of India's Rural Economy in the Pre-Colonial Era

Agriculture had remained the foundation of the Indian economy throughout its long (pre-1947) history. A series of infrastructural and technological developments contributed to the productive advances of Indian agriculture since the ancient times. Although the pre-history of settled agriculture goes back to 6500-4500 B.C., the first agricultural revolution happened with the emergence of the Indus (Harappan) civilization in 2600-1800 B.C. The use of bullock cart and ploughed furrow started in this period. Northwestern plains and Gujarat were opened to cultivation. In addition to the production of food crops such as wheat, rice, barley, millet, pulses, oil-bearing crops, cotton became the first industrial crop grown in this period. Small family farming appeared as the dominant form of production but the class differences between the landless and land-poor farmers and large landowners also became visible in this early period. The transfer of the agricultural surplus enabled the establishment of the earliest cities such as Harappa and Mohenjodaro. These advances continued in the Aryan period after 1500 B.C. During the Vedic period (1500-600 B.C.), large areas on the Gangetic Plain were opened up for cultivation and farm tools made with stone, copper, and bronze spread widely. Plough was in use in South India since the second millennium B.C. Ragi, millet, wheat, horse gram, and green gram were produced in this period. After 1000 B.C., the use of iron implements made the production of rice and bajra (bulrush millet) possible.

A second agricultural revolution took place in North India from 500 B.C. to the Christian era. The significant increase in iron production made iron ploughshares and axes

cheap and widely available. This democratized the agrarian structure to a certain extent since cheap iron axes enabled the small peasants to clear land for cultivation. The production of cotton, sugar, and indigo rose significantly. There are signs suggesting the start of rice transplantation in this period. In addition to crop production, a strong pastoral economy developed in South India during this period.

During the first millennium A.D., jowar (great millet) and bajra were introduced in Northwestern India (Byres, 2002, p. 253). Better cotton varieties were grown. Tank irrigation expanded all over South India, especially in contemporary Tamil Nadu. The Grand Anicut (Kallanai Dam), the grandest engineering project of ancient India, was constructed on the Cauvery River in the second century AD. The Viranarayana and Gangaikonda-Cholapuram tanks were constructed in the 10th century (Ministry of Irrigation and Power, 1972a, p. 60). These infrastructures helped to increase cultivated acreage as well as land and labor productivity (Byres, 2002, p. 253).

Between the 13th century and the beginning of British colonialism in the mid-18th century, several advances in production technology and methods such as the development of geared wheel, cementing liming (which enabled the production of waterproof indigo vats), and liquor distillation took place. Orange and sericulture production improved and important new crops like maize and tobacco were introduced. Irrigation infrastructure developed considerably. Vijayanagara Empire constructed the famous Anantaraja Sagara tank in Cuddapah district of Andhra Pradesh (Michael, 2009, p. 59; Ministry of Irrigation and Power, 1972a, p. 60). The Mughal state constructed the Western Yamuna Canal in Haryana in 1365. During the Akbar era, the canal was renovated in 1568, which made the irrigation of the Hisar district possible. Shah Jahan, the Mughal emperor between 1628 and

1658, ordered the restoration of the canal. A branch canal brought the Yamuna River's water to the imperial gardens in Red Fort in Delhi. In the Upper Bari Doab region, the construction of a (84 mile-long) canal on the Ravi River enabled the irrigation of the Shalimar Gardens in Lahore (in today's Pakistan). Two other canals carried the river water to Batala and Patti (in today's Indian Punjab). Under the reign of Muhammad Shah, the Eastern Yamuna Canal system was constructed in 1735 (Habib, [1963] 1999, p. 36; Michael, 2009, p. 59; Punjab Public Works Department, 1894, p. 1). Per capita agricultural production in India was not less than that of the Western Europe in the 17th century. Also, seed/yield ratio in crops such as wheat was higher in India than the Western Europe (Byres, 2002, pp. 251-254). This agricultural performance enabled the growth of other sectors. In 1595, the share of secondary and tertiary sectors in the Indian economy was 11.04% and 22.95%, respectively. Value added by rural manufacturers comprised 26% of the total manufacturing value added (Moosvi, 2002, p. 330, 354).

Despite these historical gains, however, India's rural economy was certainly *not* on the eve of a revolutionary breakthrough before the arrival of the British. A closer look at the trajectory of irrigation, the most important factor in Asian agriculture, sheds light on the significant limitations of the agrarian economy of the subcontinent. Similar to imperial China, Indian agriculture also experienced a hydraulic cycle during this period. As mentioned above, rising empires of north and south India constructed important hydraulic infrastructures. However, even under the strongest emperors, the central state did not have enough fiscal power to maintain the infrastructure. Hence, the responsibility for the maintenance activities had usually been the responsibility of the local elites and peasantries. Similar to Ming and Qing China, the private character of India's rural economy

made long-term, large-scale mobilization of labor and financial sources of the rural population very difficult. Also, political chaos and wars decreased the central states' power to construct new infrastructure and oversee the maintenance activities at the local level. As a result, most of the constructed infrastructure was left to decay over time. For instance, the maintenance of the Western Yamuna Canal in Haryana was abandoned shortly after its construction in 1355 and it continued to decline until Akbar's renovation effort in 1568. Large parts of the canal were silted and ineffective in the early 17th century, until Shah Jahan's renovation effort. The Eastern Yamuna Canal silted and weakened shortly after its construction in 1735. Compared to the northerners, the villagers of South India had been much better maintainers of hydraulic infrastructure over centuries. However, "tanks and canals were neglected and abandoned, perhaps as often as they were constructed" even there (Alaev, 1982, p. 227). For these reasons, the irrigated area was limited at the beginning of the 19th century. Although exceptionally well-irrigated pockets (such as Thanjavur district in Tamil Nadu, where 50% of the farmland was under irrigation) existed (Alaev, 1982, p. 227), only 10% of the net sown area was irrigated in India in 1800 (Shah, 2008, p. 31). As we have seen in Appendix A, 29% of the area was irrigated in Qing China in 1820. Hence, China had a clear hydraulic advantage over India at the beginning of the 19th century. However, as we will see below, the combination of India's hydraulic rise and China's decline gradually eliminated this advantage in the post-1850 era.

The absence of any productivity breakthrough in Indian agriculture led to the stagnation of per capita agricultural production after 1600. The share of industry in the national economy did not increase. Per capita GDP also stagnated (Moosvi, 2002, p. 354).

The Development of Agricultural Infrastructure in the Colonial Era

The British economic policy in India can be divided into two main periods of almost equal length. During the first century of British colonialism, from the conquest of Bengal in 1757 up until the Mutiny of 1857, the colonial administration followed a highly extractive and anti-developmental economic policy in the subcontinent. Its main goal was collecting as much land revenue as possible without any serious consideration of the peasants' capacity to pay, using this revenue to import an increasingly large volume of agricultural products from India, re-exporting a significant portion of these products to other parts of the world, and using the profits obtained from this import-re-export business to develop industry in Britain. Although the East India Company gradually reduced its extraction in Bengal after the Permanent Settlement of 1793, it repeated the same pattern of high extraction in newly colonized areas. The share of the combined transfers from Asia and the West Indies (in which India's share was very high) within Britain's total capital formation was 36.5% in 1770, 46.3% in 1801, 44.5% in 1811, and 36.7% in 1821 (Patnaik, 2002, p. 389). In short, high extraction from India assisted the Industrial Revolution in Britain significantly. During this century of colonial plunder, the British did not make any significant investment in India's agricultural infrastructure. As a result, the ratio of irrigated area to total sown area failed to increase between 1800 (10%) and 1850 (10.3%) (Shah, 2009, p. 31).

From the mid-19th century onwards, this extractive policy gave way to a more developmentalist strategy¹⁵⁸ for two main reasons. First, industrial capital accumulation in Britain reached a saturation point. A complete railway network was constructed and industrial production with modern machinery became the norm. Britain's declining capacity to absorb capital forced its bourgeoisie to search new spaces to invest. British investors started to view the Indian subcontinent as a space of immense possibilities for investment and profit. Second, the terms of the inter-capitalist and inter-state competition changed in the same period. As the rising American, German, and Japanese capitalism started to search new areas of trade and investment, British capital and state started to pay greater attention to the protection of their colonies (among which India was the most valuable) from these competitors. These factors drove the rise of British investment abroad. The ratio of its net foreign investment to net domestic capital formation rose from 42% in 1860-69 to 48.5% in 1870-79, 80% in 1880-89, and 114% in 1905-14 (Habib, 1975, p. 41).

As Table 51 demonstrates, railways, roads, and buildings received significant public investment in the early 20th century. There was also significant private investment into this sector. As a result, the length of the railway lines increased from a mere 1349 kilometers in 1860 to 25,495 km in 1890, 56,980 km in 1920-21, and 65,217 km in 1947.

¹⁵⁸ I use the term “developmentalism” in a very limited sense here, referring to the reversal of the capital flows back to the colonies in order to develop their infrastructure and thereby increase their total economic output for the sake of providing greater profit opportunities to the capital of the colonizer country. It therefore does *not* refer to egalitarian and/or welfare-oriented development. During much of the colonial era (at least until the World War I), the colonial administration prioritized the economic interests of the British capital over the Indian capital and labor. Also, when incorporating the Indian subjects to the process of economic development, it prioritized the interests of a tiny Indian elite against those of the laboring majority. Moreover, the British investment policy increased the inequality between different regions of the subcontinent. Finally, it did *not* aim to bridge or reduce the increasing gap between the economies of Britain and India, which was obviously against the economic logic of colonialism.

By 1947, all Indian districts (with a few exceptions in remote regions) had railway connection (Hurd, 1983, pp. 738-739). Although partition in 1947 decreased India's railway mileage, India's railroad coverage remained significant, 53,600 km in 1950-51 (Mukhopadhyay, 2003, p. 5). Similarly, the total length of (national and state) highways was 193,534 kilometers in 1951 (GOI, Ministry of Statistics and Program Implementation, 2013, p. 301). The development of transport network was certainly important for the (potential) development of India's rural economy for two main reasons. First, it removed an important obstacle to the increase of agricultural trade.¹⁵⁹ Second, it increased the possibility/potential of establishing urban-rural industrial linkages, which has been crucial for the development of *modern* rural industry in the 19th and 20th centuries. Although China's land surface is almost three times that of India, as we have seen in Chapter 2, it had only 22,900 km of railways and 126,700 km of highways in 1952. In sum, a significant gap opened up between the two countries' transport infrastructure in favor of India. This is one of the fundamental points to consider when assessing the economic performance of their rural economies in the post-1950 era. While the PRC had to invest heavily to develop its insufficient transport network, the Indian government did not need to invest to the same extent due to this colonial legacy.

Table 51 The Composition of Public Investment in British India, 1898-1938

	Railways	Roads & Buildings	Irrigation	Others	Total
1898-99	75	56	20	14	165
1901-02	88	67	24	17	196
1919-20	256	198	35	26	514
1927-28	434	245	103	44	827
1931-32	150	195	95	49	488
1937-38	86	186	50	36	358
Total	6924	5618	1935	1052	15529

¹⁵⁹ On the contribution of transport infrastructure to agricultural development in Andhra Pradesh see Rao, 1988, pp. 55-56.

(44.58%) (36.17%) (12.46%) (6.77%)

Source. Kumar, 1983b, p. 936.

Note. Percentages in parentheses are author's calculations based on the source.

Given the fact that agriculture has comprised the great majority of India's rural economy in the colonial and post-colonial periods and water has been the most important factor of agricultural production, the development of hydraulic infrastructure (comprising irrigation, dike/embankment, and drainage facilities) has been more important than other types of infrastructure for rural India's economic development. Although the above-mentioned factors behind the increase of the British capital investment in India also apply to hydraulic investment, another major reason appears to be the recurrent famines in India in the second half of the 19th century. The Orissa famine of 1866-67 took 3 million lives in the coastal districts of the state (D'Souza, 2003, p. 47). The Great Famine in Southern and Western India in 1876-79 took *at least* 6 million lives. The total death toll of the famines between 1876 and 1902 was *at least* 12.2 million (Davis, 2001, p. 7).

Extraction by the British (comprising revenue collection and food imports by force) was the key factor behind the transformation of the crop failures (due to drought) into famines (Davis, 2001, pp. 25-59). On the other hand, the insufficiency of the hydraulic infrastructure was the major cause of the crop failures. A Famine Insurance Fund was established in 1881, which received 15 million Rs annually in most of the following years. Between 1881 and 1924, about 500 million Rs were allocated to this fund and 21% of it was spent for developing hydraulic infrastructure (Kumar, 1983b, pp. 934-935). As Table 51 demonstrates, hydraulic infrastructure received 12.46% of the total public investment between 1898 and 1938. Table 52 provides a list of the large-scale hydraulic projects that received public funds exceeding 10 million Rs. It demonstrates that thirty large hydraulic

projects were completed in the second half of the 19th century (especially after the above-mentioned famines) and the first half of the 20th century. We will turn below to the limitations of the government investment to meet the hydraulic needs of India's vast countryside. However, this does not change the fact that hydraulic infrastructure received far greater investment during this period than all previous periods. Moreover, the availability of modern technology increased the quality of the constructed infrastructure compared to all previous periods (Habib, [1963] 1999, p. 39).

Table 52 Large-Scale Hydraulic Projects Completed Before 1947

	Type	Estimated Cost (Million Rs)	Benefited Area (1000 hectares)
North			
Haryana			
1. Western Yamuna Canal (1886-92)	Diversion	36.1	460.89
Punjab			
2. Upper Bari Doab Canal (1879)	Diversion	23.6	335.17
3. Sirhind Canal (1887)	Diversion	45.1	600.17
4. Eastern Canal (1933)	Diversion	25.8	141.35
Uttar Pradesh			
5. Upper Ganga Canal (1854)	Diversion	47.6	699.38
6. Agra Canal (1873)	Diversion	13.3	138.36
7. Lower Ganga Canal (1878)	Diversion	45.9	527.95
8. Betwa Canal (1886)	Diversion	14.0	98.70
9. Ken Canal (1915)	Diversion	30.3	75.26
10. Garai & Ghaggar Canal (1917)	Storage	16.7	39.3
11. Sarda Canal (1926)	Diversion	151.7	612.47
South			
Andhra Pradesh			
12. Kurnool-Cudappah Canal (1870)	Diversion	76.5	39.51
13. Godavari Delta System (1890)	Diversion	29.6	449.64
14. Penner River & Canal System	Diversion	70.7	74.34
15. Krishna Delta System	Diversion	74.1	442.37
16. Nizamsagar	Storage	39.2	111.29
Mysore			
17. Krishnarajasagar Dam & Visveswaraja Canal (1930)	Storage	45.0	48.56
Tamil Nadu			
18. Periyar System (1897)	Storage	10.8	57.70
19. Cauvery-Mettur Project (1934)	Storage	66.2	134.0
Central			

Madhya Pradesh			
20. Tandula Reservoir (1923)	Storage	12.0	66.76
21. Mahanadi Canal & Murrumsili Reservoir (1923)	Storage	15.7	84.46
East			
Bihar			
22. Sone Canals (1875)	Diversion	26.8	347.23
Orissa			
23. Orissa Canal (1895)	Diversion	27.2	111.86
24. Rushikulya System (1901)	Storage	12.2	2.79
West Bengal			
25. Damodar Canal Project	Diversion	12.4	72.85
West			
Maharashtra			
26. Godavari Canal (Nandur-Madhmeshwar Weir) (1916)	Storage	10.7	32.15
27. Pravara River Works (Wilson Dam & Ozat Weir) (1926)	Storage	16.2	23.07
28. Nira Left Bank Canal & Shetpal Tank (1927)	Storage	11.7	47.54
29. Nira Right Bank Canal (Bhatgar Lloyd Dam) (1927)	Storage	60.2	35.19
Rajasthan			
30. Gang Canal (1928)	Diversion	33.2	303.52

Source. Ministry of Irrigation and Power, 1972a, pp. 415-416.

Note. The source does not provide the date of the Damodar Canal Project. Two main projects related to the general Damodar project were the Eden Canal (completed in 1881) and Damodar Canal (completed in 1933).

As a result of the increased investment, the irrigated acreage rose rapidly, from 10.3% in 1850 (Shah, 2009, p. 31) to 16.3% in 1900 (13.4 million ha of irrigated area out of 82.2 million ha of total sown area) (Ministry of Irrigation and Power, 1972a, p. 62). As Table 53 demonstrates, development in the first half of the 20th century was more dramatic, increasing the irrigated area to 28.2% by 1947. On the other hand, as we will examine in the next section, the geographical scope of hydraulic development was quite narrow in the pre-colonial period. Since the most irrigated parts of Punjab and the well-irrigated Sind province remained within the boundaries of Pakistan, the partition negatively impacted India's agrarian development. As a result, as Table 53 demonstrates, in the aftermath of the

partition a huge gap immediately appeared between the irrigation capacities of India and Pakistan in favor of the latter.

Nevertheless, the ratio of irrigated area in India at the beginning of the post-colonial period, which was 19.4% in 1947 as shown by Table 53 and 17.8% in 1952 (GOI, Ministry of Labour, 1955, Appendix VII, p. f), was still much higher than a century back. Also, as we have seen in Appendix A and Chapter 3, China's continuous hydraulic decline decreased its ratio of irrigated acreage from 29% in 1820 to 16.3% in 1949 (which rose to 17.9% by 1952). Hence, two countries' irrigation capacity was quite similar in the early 1950s. In addition to India's significant advance over China in the realm of transport infrastructure, it is also necessary to keep in mind this convergence in irrigation infrastructure of the two countries in order to make a proper assessment of the comparative performance of their rural economies in the post-1950 era.

Table 53 Irrigated Area and Sources of Irrigation in Pre- and Post-Partition India, 1947 (Million hectares)

	Net Sown	Net Irrigated				
Undivided India	116.8	28.2 (24.1)				
India	98.5	19.4 (19.7)				
Pakistan	18.3	8.8 (48.1)				
Sources of Irrigation						
	Govt. canals	Private canals	Canals (Total)	Wells	Tanks	Other
Undivided India	13.1 (46.5)	2.1 (7.4)	15.2 (53.9)	6.6 (23.4)	3.3 (11.7)	3.1 (11)
India	6.3 (32.5)	1.9 (9.8)	8.2 (42.3)	5.3 (27.3)	3.3 (17)	2.6 (13.4)
Pakistan	6.8 (77.2)	0.2 (2.3)	7 (79.5)	1.3 (14.8)	—	0.5 (5.7)

Source. Ministry of Irrigation and Power, 1972a, p. 69, 395.

Note. Figures in parentheses show the percentage share of each item within the total irrigated area.

Constraints on the Development of India's Rural Economy

This section briefly analyzes the main growth-constraining factors in rural India by the time of independence including the scarcity of capital, diminishing availability of natural resources, limited development of rural infrastructure, and the underdevelopment of human capital.

The scarcity of capital

The previous chapters have examined the crucial role of agricultural taxation in the economic development of largely agrarian underdeveloped countries that lacked colonies to enable them to externalize a part of their burden of capital accumulation. China and India belonged to this category. Since agriculture and allied activities (the primary sector) had comprised the great majority of India's total output during its long history until 1950 (66% in 1595, 63.8% in 1901-10, and 54.5% in 1947-50) (Moosvi, 2002, p. 354; Sivasubramonian, 2000, p. 571), effective agricultural taxation was necessary to finance the development of the agricultural and industrial infrastructure and set up modern industries in the countryside.

Agricultural tax usually takes two main forms: land tax and income tax. I will start with the land tax since it was the main form of agricultural taxation in India before 1947. The Mughal state taxed over one-quarter of the peasants' produce. The tax burden over agriculture was not lighter (and probably heavier) in other states ruling other parts of the subcontinent. As examined above, tax farmer elites squeezed a significant portion of the land tax and constrained the revenue reaching the central government treasury. Nevertheless, even after this squeeze, the Mughal state's revenue was substantial. The tax

to GDP ratio was about 15% at the pinnacle of the Mughal power. The same ratio was only 6.3% in England in 1688 (Maddison, 1971, p. 22, 45). It was also low in China under the Qing dynasty, which came to power after a series of peasant rebellions that toppled its Ming predecessor and therefore continuously refrained from raising the tax burden of the peasants. The Republican regime tried but failed to change this. As a result, China's tax to GDP ratio increased from 3% in the late 19th century to only 5% in the first half of the 20th century. Interestingly enough, the rapidly modernizing states of Western Europe and Japan struggled for a long time before reaching the Mughal state's tax to GDP ratio in the late 19th and early 20th centuries (Maddison, 1971, p. 22; Nurkse [1952] 1967, p. 75; Popov 2014: 82). On the other hand, in contrast to the European and Japanese states, the Mughal state spent much of its revenue for military expansion (the Mughal army had over one million soldiers during the time of Akbar) and conspicuous consumption of the elites. Therefore, its investment in productivity-increasing fields was low (Maddison, 1971, p. 22, 39). Unsurprisingly, peasant dissatisfaction regarding high state extraction led to a series of rebellions that undermined the Mughal power and opened India's doors to the British (Habib, [1963] 1999, pp. 378-405).

As examined above, the East India Company initially followed a high land tax policy in Bengal in its first few decades of rule but the landlords finally forced the British to accept the Permanent Settlement in 1793, which dramatically reduced the level of land tax in the following decades. The company repeated the same pattern in other regions of India, which met with a similar landlord resistance. In fact, one of the main factors behind the Mutiny of 1857, the first significant Indian revolt against British rule, was big landowners' dissatisfaction with British tax policy (Habib, 1975, p. 36).

Despite its violent repression by the British, the Mutiny led to significant changes in the mode of colonial governance. In 1858, the British government in London withdrew the East India Company's right to rule India and started to rule it directly. In the second phase of colonial rule, the British followed a more conciliatory policy towards the landed interests in order to guarantee political stability. Hence, the land revenue declined continuously and dramatically in the post-1857 period. The share of the land revenue in the value of gross agricultural output estimated as over 10% for 1860 (Kumar, 1983b, p. 918). Between 1860 and 1900, agricultural prices rose by 80% but land revenue increased by only 25%. Moreover, agricultural output increased by 25% between 1868 and 1900. This was a significant tax cut for the landowners. The British concern to buy landlords' support brought the idea of a permanent settlement throughout the empire. Rising public expenditure after 1872 led to the abandonment of this idea in 1883 but the land tax remained light. The cancellation of the permanent settlement came to the agenda in Bengal in 1938 but not put into practice until the end of the WWII. As a result, as Table 54 demonstrates, the tendency of declining land revenue continued in the 20th century. Between 1900 and 1947, the share of land revenue in the value of gross agricultural output never exceeded 5% and dropped to 2% on the eve of independence.

Table 54 Land Revenue and Its Share in the Value of Gross Agricultural Output in the British India, 1900-1947

Year	Land revenue (Million Rs)	Its share in gross agricultural output
1900-01	263	5%
1921-22	347	3%
1931-32	330	5%
1937-38	266	4%
1940-41	276	3%
1946-47	313	2%

Source. Kumar, 1983b, p. 918.

Although lightening of the tax burden on the agricultural sector has been a common practice in countries that have completed basic industrialization and reduced the share of agriculture in total GDP to a low level, in a heavily agrarian economy like the British India, lowering the agricultural tax to a negligible minimum practically meant draining the state of funds that could be spent for constructing the much needed agricultural and industrial infrastructure, developing human capital, and implementing industrial support policies. It is, of course, true that the colonial administration cared mainly about protecting the British economic and political interests and was not much concerned about developing the Indian economy. However, this general truth should not lead us to miss the fact that as long as the British economic and political interests remained unthreatened, the colonial administration did not have any objection to investing in infrastructure since the 1860s. The significant investment in transport and hydraulic systems since the mid-19th century is instructive in this respect. Moreover, the combination of the pressure exerted by the Indian industrialists for a long time and the necessity of keeping India under its control during the WWI forced the British to leave its free trade policy behind and start protecting Indian industry with tariffs and duties. Hence, during the last three decades of the British rule there was room for providing financial support to the industrial sector as well. Although it did not guarantee the development of rural industry, state support to urban industry had the potential to create more favorable conditions for the development of urban-rural urban linkages. As the above-mentioned abandonment of the idea of an all India permanent settlement and the questioning of the existing permanent settlement in Bengal demonstrate, the need for greater agricultural taxation was well recognized.

Since landed interests successfully resisted taxation of landed property, agricultural income tax came to the agenda as an alternative way to overcome the fiscal shortfall. Income tax was collected in India for the first time in 1860. The government levied taxes to more than a million people. Despite the Bengali zamindars' claim that the collection of income tax was a violation of the terms of permanent settlement, the government did not give them a tax exemption. However, the new tax was collected for only five years. It was then replaced with certificate and license taxes but they brought much less revenue than the income tax. Agricultural income tax was collected again between 1869 and 1872. However, landowners' opposition finally succeeded. Agricultural incomes were exempted from income tax in 1886 based on the claim that they were already taxed by land taxes. Table 54 shows that this claim was unconvincing. Furthermore, provincial cesses, which had formed one part of the land tax, were abolished in 1913-14. Reintroduction of the land tax was attempted in 1918-19 but failed due to the effective opposition of the representatives of the landed interests in the Assembly (Kumar, 1983b, pp. 924-925).

Hence, although agriculture continued to comprise the largest sector of the Indian economy, it remained significantly undertaxed during the post-Mutiny era and especially in the final half century of the British rule. Overall, tax to GDP ratio, which was 15% at the pinnacle of the Mughal power (Maddison, 1971, p. 22, 45) and over 10% in 1860 (Kumar, 1983b, p. 918) decreased to only 6.22% in 1950-51 (GOI, Ministry of Finance, 2013, p. 14). Given the fact that China's tax to GDP ratio was about 5% in the Republican era, we can conclude that the decline of agricultural taxation in India led to a convergence between the two countries by 1950 in terms of the lack of fiscal capacity of the state.

The British India's failure to mobilize the financial resources of the rural population constrained development spending significantly.¹⁶⁰ Although the share of irrigation investment in total public expenditure remained significant (Table 51), the limited public funds made a nationwide irrigation effort impossible and limited it to a few selected regions like Punjab and Madras. As we will see in the next section, this geographical narrowness of hydraulic development took a heavy toll on Indian agriculture. More importantly, the absence of effective agricultural taxation constrained the transfer of the agricultural surplus to rural industry. The limited performance of rural industries, to which we will turn below, was therefore unsurprising.

Diminishing availability of natural resources

Under increasing population pressure, more land was brought under cultivation. In addition to decreasing the scale of production and increasing land fragmentation, the availability of natural resources declined continuously. A study tracing the changes in land use in 123 districts of Northern British India (comprising areas located within contemporary Bangladesh, India, and Pakistan) found that the ratio of the total natural resources (comprising forest/wood, grasslands, wetlands, and scrub/waste) to total land area (comprising natural resources, arable land, and surface water) decreased from 57.7%

¹⁶⁰ Two points need to be emphasized with regard to the state's mobilization of the financial sources of the rural population (via agricultural taxation and establishing local funds for infrastructural development). First, the problem of agricultural taxation is *not* simply about high versus low exploitation of the ordinary peasantry. It is mainly about the distribution of the fruits of exploitation (the agricultural surplus) between the landed elite and the state. A strong state can keep the rent rate unchanged, decrease it, or implement other policies to reduce (or even eliminate) landowners' exploitation of the tenants while taxing agriculture more effectively. Hence, low agricultural taxation by the state and high exploitation of the ordinary peasants by the landlords can go together (as in the case of British India) while high agricultural taxation and low exploitation is also possible. Second, the relationship between the state's capacity to mobilize the financial sources of the rural population and its fiscal power is multi-directional. Higher mobilization capacity generates higher fiscal capacity, which in turn enables the state to penetrate the countryside deeper and mobilize more financial sources.

in 1870 to 51.5% in 1890, 46.7% in 1910, 45.2% in 1930, and 40.5% in 1950. Per capita availability of natural resources also declined, from 0.56 ha in 1870 to 0.44 ha in 1890, 0.36 ha in 1910, 0.31 ha in 1930, and 0.21 ha in 1950. The combined share of the forest/wood decreased from 24.6% in 1870 to 21.5% in 1890, 19.2% in 1910, 18.2% in 1930, and 16.2% in 1950 (Author's calculations based on Richards et al., 1985, pp. 531-532). In 1950, forests covered 12.31% of India's total geographical area (IndiaStat, 2014). Similar to pre-1949 China, long-term deforestation and decreasing availability of natural resources increased the severity of soil erosion, decreased nitrogen level of the soil, silted the irrigation canals, and increased the frequency and damage of floods (Davis, 1951, p. 22; Klein, 1974, pp. 210-211). As we will see below, it also helped the spread of communicable diseases like malaria. On the other hand, the share of the forests in the total land surface of China was only 8.6% in 1949 (Zhang & Song, 2006, p. 384). Hence, the magnitude of environmental degradation seems greater in China than in India by 1950.

Limited development of rural infrastructure

As examined before, the rise of public investment resulted in the expansion of irrigated acreage in British India especially in the first half of the 20th century. On the other hand, the ratio of irrigated acreage in the post-partition India (17% of all cultivated area) was still insufficient to achieve a significant level of agricultural growth. Moreover, the geographical scope of irrigation development was quite narrow. As Table 55 demonstrates, while Punjab had 7.3% of the population and 11.9% of the cultivated area, it contained 46% of the irrigated area of the British India. In fact, it was one of the best-irrigated regions of the world.¹⁶¹ Madras and United Provinces received a roughly average share of irrigation

¹⁶¹ At first sight, Bombay & Sind also seems to be similarly advantaged. However, when we separate them, we see that Sind (located in contemporary Pakistan) was extremely advantaged while Bombay (in

relative to their population and cultivated area figures. Finally, although Bengal, Bihar, and Orissa had 27% of the population and 23.2% of the cultivated area, they only had 4.8% of the irrigated area.

Table 55 Population, Cultivated and Irrigated Area, and Irrigation Finance in Selected Provinces of British India, 1945 (% of National Total)

Province	Population	Cultivated Area	Irrigated Area	Capital Outlay
Bengal	15.50	11.30	0.8	1
Bihar & Orissa	11.58	11.99	4	5
Bombay & Sind	6.51	30.78	15	24
Bombay	5.35	NA	1	7
Sind	1.16	NA	14	17
Madras	12.68	17.34	12	13
Punjab	7.30	11.93	46	30
United Provinces	14.14	14.84	17	21

Source. Davis, 1951, pp. 21-22; Whitcombe, 1983, p. 736.

Note. Population and cultivated area figures are from Davis and irrigated area and capital outlay figures are from Whitcombe. Cultivated area figures are for 1931. Population figures are for 1941. Irrigated area and capital outlay figures are for 1945. Although Sind (in today's Pakistan) was separated from the Bombay Presidency in 1936, I use their total figures in order to be able to use the cultivated area figure for 1931 without distorting the consistency of the overall presentation. I calculated the percentage figures for population and area based on Davis' work.

Several factors are worthy of attention to understand this narrow geographical scope of hydraulic development in British India. The limited size of the available public funds (due to limited agricultural taxation) seems to be a major constraining factor that had continuously forced the bureaucrats of the Public Works Department to make hard spending choices. They could spread the limited funds equally thinly over the vast countryside or concentrate investment in a few regions. As Table 55 shows, the British chose the latter. In retrospect, this choice is certainly open to criticism from an egalitarian

contemporary India) was relatively disadvantaged in terms of irrigation investment and development. I use the cultivated area figures from 1931, which do not provide a Bombay-Sind breakdown. Bombay's total area was 76,443 square miles and Sind's area was 48,136 square miles in 1941 (Davis, 1951, p. 21). This shows that their unequal irrigation investment and development had nothing to do with their sizes.

viewpoint. On the other hand, as long as the funds remained limited, it is hard to claim that spreading them equally thinly would make a big difference for agrarian development.

Similar to elsewhere, power struggles within the bureaucracy, which were certainly influenced by conflicting regional interests, determined the outcomes of debates over regional distribution of irrigation spending. It is therefore hard to see these decisions as outcomes of purely rational and objective evaluation. On the other hand, viewing them as entirely contingent is equally problematic. There seems to be a general economic logic behind these spending decisions. Similar to private entrepreneurs who usually make investment decisions based on the prospects of immediate returns, the colonial state prioritized short-term returns of hydraulic projects. Two main criteria seem to have shaped the state's estimation of the short-term profit prospects. Natural conditions (such as climate, topography, and water flow) were the first criteria. In regions where harnessing rivers and preventing floods are very difficult and therefore required high spending for protective works without receiving immediate returns, it was difficult to launch and easy to cancel new projects. Conversely, spending on regions having better natural conditions was relatively easier. Local peasantries' capacity to pay irrigation fees was also an important consideration. In fact, the colonial administration followed a strict criterion with regard to spending/return ratio before deciding to launch new projects.¹⁶² Agrarian class structure seems to have played a certain role in making these decisions. In regions where productive entrepreneurship was strong and unproductive landlordism was weak, the state

¹⁶² "The test of financial productivity being that the project should be able to show a certain percentage return on the sum-at-charge in the tenth year after its opening, the sum-at-charge being the capital cost plus the arrears of interest up to that year. This principle [has been] followed since then and the rate of return required before a project could be considered as financially productive was fixed [at varying rates over time]. It was fixed at 4 per cent for works sanctioned before 1st April, 1919, 5 per cent for works sanctioned between 1st April, 1919 and 1st August, 1921; and 6 per cent for all works sanctioned after that date. From 1st April 1949, it was fixed at 3.75 per cent" (GOI, Ministry of Power and Irrigation, 1972a, p. 250).

bureaucracy had reasons to expect greater economic dynamism created by improved irrigation and this made investment decisions easier. Conversely, officials were less enthusiastic about spending much in regions that were thought to have recalcitrant landlords lacking interest in productive activities and/or small peasants lacking money and initiative to make good use of the irrigation facilities.

These factors are important to understand the regional variation of irrigation spending and development that is shown above. Bengal, Bihar, and Orissa were flood-prone regions with rivers that were hard to harness (Mishra, 1997; Sinha, 2008). Natural conditions of Punjab, Madras, and United Provinces were relatively less difficult. More importantly, unproductive landlordism was much stronger in Bengal, Bihar, and Orissa than in other areas due to the Permanent Settlement of 1793. In contrast, the element of rich peasant entrepreneurship was relatively stronger in Punjab, Madras, and western UP (Patnaik, 1986, 1997). This was especially visible in Punjab where irrigation and settlement expanded simultaneously. The British organized large tracts of Punjab around “canal colonies,” which comprised one-sixth of the cultivated area of the province in the early 1930s. With the strong backing of the state, relatively prosperous farmers aiming to cultivate better-irrigated land and get wealthier were settled in these areas. Average farm size was (between 22.5 and 27.5 acres) much larger than the rest of the country and enabled efficient farm organization. Those settlements did not provide much scope for unproductive landlordism and created the conditions for the emergence of an enterprising middle and rich peasantry. Although much of those colonies remained within Pakistan, some of them (such as Gurgaon in contemporary Haryana) remained in India (Bagchi,

2010, pp. 45-46). These were the main factors behind the regional variation and the narrow geographical scope of hydraulic development that are illustrated in Table 55.

The Hydraulic Decline of East India

The roots of the hydraulic problems of three large states of contemporary east India (Bihar, Orissa, and West Bengal) also lay in the Permanent Settlement of 1793. The Settlement not only exacerbated the unproductive tendencies of the landed elite, more importantly, it also released the landed elite (comprising the zamindars, big landowners, and groups of landowning families) from their responsibility of maintaining roads, dams, canals, or markets. Although unproductive tendencies of the zamindars had pre-colonial roots and the agrarian infrastructure of the region was not particularly developed, zamindar leadership in infrastructure works, compelled by pre-colonial administrations, was clearly crucial to keep east India's agriculture at a decent standard until the Settlement. For this reason, the East Indian Company's decision to release them from their previous developmental responsibilities "tended to depress the productive or profit-yielding capacity of the land" (Bagchi, 2010, p. xl, 200).

Two reasons seem important to explain this decision. First, the fixed taxes were high at the time of the settlement because the East India Company urgently needed these revenues to finance wars to conquer the rest of India (Bagchi, 2010, p. 29). Hence, it appears that the company viewed as a necessary concession to obtain tax revenue from the elite without much difficulty. Second, as examined before, the East India Company prioritized the expansion of its territorial control and increase total revenue in the short run without paying much attention to increase rural India's productive capacity in the long run.

Hence, releasing the landed elite from its developmental responsibilities seemed tolerable for the company.

On the other hand, with the post-1857 transition to direct British rule, a new economic strategy paying greater attention to developing the productive capacity was adopted gradually. Hence, as Bagchi suggests, “new institutions” were needed “to repair the damage” done by the Permanent Settlement (Bagchi, 2010, p. 200). However, after more than sixty years of retrenchment from infrastructure works, convincing/forcing the landed elite to assume these responsibilities again proved to be immensely difficult.

I will present below two cases to illustrate this phenomenon. I will first look at the embankment projects on the Orissa Delta in the 19th century, which directly illustrates the failure of the colonial government to convince/force the landed elites to assume their pre-settlement responsibilities. I will then examine the trajectory of canal irrigation in south Bihar in the late 19th and early 20th century. Unlike the majority of east India, local leadership in hydraulic works in this area continued to be strong in the post-Settlement period. However, we will see that the transition from the produce-rent to fixed-rent system in the late 19th century made a negative impact on local leadership that was remarkably similar to the impact of the Permanent Settlement on the great majority of east India. I will end this subsection with a brief note on West Bengal that points out to the general character of the decline of local leadership and mobilization.

The failure of the Orissa embankment project

Before going through the details of the Orissa case, it seems necessary to recall the similar challenges faced by the embankment projects in other countries. Problems of river control in Bihar and Orissa are comparable to those of the Yellow River in China and the

Mississippi River in the United States. In all these areas embankment itself did not solve the flood problem. In fact, historical experience has demonstrated that without proper and regular maintenance, embankments would aggravate the drainage problem rather than solving it. For this reason, engineers and bureaucrats have intensely debated the merits of embankment projects in China, India, and the US during the last two centuries. Commenting on the validity of the opposing arguments is beyond the scope of this study. I will restrict myself to a brief critique of some Indian scholars' tendency to belittle the achievements of the Chinese and Americans in river control in order to explain the failures of embankment projects in Bihar and Orissa. In an article written after the floods in the Kosi River region of Bihar in 2008, Rajiv Sinha claimed that:

The bottom line however is that flooding problems have been further aggravated by the construction of embankments...The embankment strategy has been questioned at the international level citing the *failure in Mississippi and three major Chinese rivers* and alternative methods such as small-scale irrigation strategies are now favoured in many flood-prone countries such as Bangladesh. Our experience shows that there has been no appreciable flood moderation in the Kosi and other rivers of north Bihar even after the construction of embankments...Apart from misery that floods bring, the beneficial effects of floods have to be understood and the age-old concept of "living with the floods" needs to be reiterated (Sinha, 2008, pp. 44-46, emphasis mine).

In another article about the flood problem around the Kosi River, after referring to the floods in Mississippi between 1897 and 1927 and claiming the prevalence of flooding on the Yellow River (without citing any evidence), Dinesh Kumar Mishra claims:

In China and also in America, the experiences with embankments had been quite contrary to the initial expectations and their breaching had been a regular phenomenon. As consequence of what seems technical shortsightedness the flood control projects have *not only not performed according to the initial expectations, they have in fact created a worst scenario than what had existed earlier* (Mishra, 1997, p. 2214, emphasis mine).

Pointing out the problems of the large embankment projects in history and emphasizing the benefits of small-scale hydraulic projects are certainly worthy of credit. However, Mishra and Sinha's sweeping generalizations about Chinese and American embankment projects prevent us to see the historical causes of India's river control

problems. The existence of flood problem in Mississippi between 1897 and 1927 (to which I can add the floods in 2007) does not change the fact that flood control efforts achieved a significantly greater success in the Mississippi river basin than the Kosi river basin. More importantly, as our examination of China's river control problems demonstrate, a strong rural organization mobilizing labor and financial sources of the villagers is capable of solving the flood problem through embankments (this obviously does *not* mean that flooding is entirely absent in China). Unsurprisingly, there is no evidence proving that regions around the Mississippi and China's great rivers have been as flood-prone or agriculturally unstable as the Kosi river basin since the 1950s. In fact, the agricultural performance of these two regions have been consistently and significantly higher than Kosi region during this period.

Furthermore, increasing emphasis on small-scale projects and de-emphasis of the embankments in Bangladesh (mentioned by Sinha as a positive alternative to the so-called "failure" of China and the United States) has so far not led to a significant improvement in its agricultural performance. For these reasons, rather than making sweeping generalizations about the embankment projects in China and the US that are not supported by empirical data, focusing on the problem of rural organization appears to be a more fruitful approach to explain the flood control problems of eastern India historically. After making this clarification, we can now turn to the case of the Orissa Delta in the 19th century.

The East India Company conquered Orissa in 1803. During the first fifty years of its rule, it spent limited efforts to construct and strengthen embankments on the deltaic region. The limitedness of the construction effort and the weakness of maintenance and repair activity caused the aggravation of the siltation and flood problems. After the post-

Mutiny transition to the direct British rule in 1858, the colonial bureaucracy designed a method of diverting the river water through a complex of irrigation and navigation canals, which was expected to be both protective and profitable. The involvement of the British private capital was considerable in the first phase of hydraulic efforts. The East India (Orissa) Irrigation Company, which was an essentially private enterprise, was established and signed contracts with the local and central governments in 1862 and 1863. After five years of construction work, the company failed to extend irrigation significantly. Also, in the areas to which it brought irrigation, it failed to convince the local peasantry to use and pay for irrigation. As a result of mounting unrecovered losses, the company defaulted and the government assumed the ownership of the irrigation scheme in 1868 (D'Souza, 2003, pp. 43-48). The fact that it was wealthy capitalists of Britain, not their much more modestly endowed Indian counterparts, who failed to develop irrigation in Orissa is worthy of emphasis. Rural Orissa was too large and difficult, even for the private capital of the strongest empire of the time.

Things did not improve much even after the government takeover of the scheme. The demand for canal irrigation remained low even during the drought of 1870-71. In that year, after a long wait the officials reduced the fee to 1 Rs per acre, which increased the water demand significantly. However, the delayed watering of the fields could not prevent the huge crop losses. A subsequent detailed investigation of the causes of limited water use found two main factors at play. First, although the irrigation leases were generally granted to the zamindars who collected taxes from a large number of tenants, they did not assume responsibility for collecting the fees. Government employees were too few to collect fees from a large number of water users. Second, the tenants found water fees high and were

unwilling to pay. For these reasons, both the irrigated area and collected fees remained low. The government tried to rectify the mounting fiscal problem by attempting to charge the peasants who were found to be using canal water illicitly. This led to a long series of legal disputes, which decreased the government's hope to become capable of collecting large fees. In 1882, H.J.S. Cotton, the Secretary of the Board of Revenue of the Lower Provinces, explicitly admitted the state's failure to transfer a portion of the infrastructure costs to the local elite and the people:

Experience, however, shows that nothing is more difficult than to arrive at an opinion which shall command general assent as to the degree of benefit conferred by a system of embankments...not only that the zamindars whom it might be proposed to hold liable would refuse to admit the degree of benefit estimated by the officers of government, but that their objections, whether really sound or not, would to some extent be bonafide, and that the *very undesirable impression would be created that the government was making them pay for what it had undertaken* (D'Souza, 2003, p. 61, emphasis mine).

The government's inability to get the local population to share the construction and maintenance costs became more visible during its dispute with the Raja (princely ruler) of Aul between 1886 and 1888. Against the British demand to assume the responsibility of embankment maintenance, the Raja contended that he was under no legal obligation to do so and could not be sued in civilian courts for the damages due to the declining quality of the embankments. The Raja's effective opposition eventually defeated the British attempt. In 1888, the government of Bengal dismissed all of its claims on the Raja. This was a major turning point for British efforts to develop the hydraulic infrastructure in the deltaic region. The government's initial optimism about the potential expansion of the irrigated area (2.5 million acres) was never realized. In 1928, the maximum irrigated area was only 250,390 acres. In contrast to most states, which are unwilling to admit their failures and pretend that they are working to solve the existing problems, the local government was quite honest and transparent in evaluating its development record. In a five-point directive issued in 1904,

the Board of Revenue to the Commissioner of the Orissa Division admitted the utter failure of its effort to develop the hydraulic infrastructure over many decades and declared the abandonment of the overall attempt. The last two points of the document stated:

- (4) Government is under no obligation to maintain or construct embankments in temporarily settled estates; but, on the contrary, is at liberty to abandon existing embankments without granting any compensation for doing so.
- (5) In permanently settled areas, no new works need to be constructed except on the application and at the cost of the proprietors concerned (D'Souza, 2003, pp. 62-64).

This account invites us to consider the hydraulic problem of the British India as a problem of rural organization and governance rather than a simple funding problem. The state's lack of capacity to mobilize labor and financial sources of the rural population appears as a major factor behind the failure to develop hydraulic infrastructure in the Orissa Delta. As a result, problems of siltation and flooding remained unsolved and irrigated area continued to be very limited. This made a constant and significant downward pressure on land productivity.

The decline of zamindar-led labor mobilization in South Bihar

While the Orissa case exemplifies the local elites' effective opposition against assuming leadership role in hydraulic works, in a few other regions, changes in agrarian structure undermined relatively well-functioning elite leadership in hydraulic works. The case of South Bihar exemplifies this interesting pattern. In this region, zamindars had played a key leadership role in the construction and maintenance of the *ahars* and *pynes* (which belonged to the category of "private canals" in official documents). These canals had fulfilled both irrigation and protective functions. They were diverting water from the rivers to farms located in distant and hilly areas. They were also useful in discharging a portion of the surplus river water and thereby reducing the risk and damage of the floods. These irrigation systems, which covered about half of the cultivated area at the beginning

of the 20th century, made the production of rice possible in this dry region. They also assisted the region to shield itself from the devastating famines that affected Orissa (1866), Bihar (1873-74), and all-India (1896-97). Two factors made the South Bihar zamindars major stakeholders in the construction and maintenance of these infrastructures. Although cultivation was small-scale and dispersed, each zamindar had control over several villages. This reduced competition between zamindars over the use of water. It also helped the zamindars to check the competition between different villages under their control. Finally, it increased the amount of labor that can be mobilized in irrigation works.

The prevalence of the produce-rent system was another supporting factor. In contrast to the fixed rent system in which the link between output and rent is weak, the produce-rent system, which determines the rent based on the annual crop output, tightly links rent with output. Compared to other zamindars of Bihar and India, the zamindars of Southern Bihar were not more benevolent towards their tenants. Nevertheless, while the produce-rent system had incentivized them to lead the hydraulic development, their control over large areas enabled them to do so. As Nirmal Sengupta notes, since irrigation was a major factor determining crop output, although land appeared “to be measured by length and alienated or transferred as land alone,” it did not “operate as a separate identity from the scope of irrigation.” Rent was determined based on the annual variation of “land-irrigation combined.” Hence the landlords of the region perceived the irrigation development as the means to raise their rental income (Sengupta, 1980, pp. 159-182). These peculiar circumstances led to the formation of a relatively developmentalist zamindari class.¹⁶³

¹⁶³ Sengupta examines the economic basis/logic of the prevalence of a relatively developmental zamindari class in South Bihar by noting that: “It seems hardly possible to support the thesis that the irrigation system

However, the reversal of these two conditions undermined the zamindari leadership in hydraulic works since the second half of the 19th century. The initial blow came with the subdivision of large holdings in the region. As a British top official examined in 1922,

It is admitted on all sides that the irrigation works of the Gaya district and other districts have fallen into a very bad state of disrepair. The chief cause for this is that during the past 40 or 50 years there has been a great deal of subdivision of the landlords' interests. There has been a breaking up of large estates and irrigation works which formerly belonged to one estate and were maintained in a state of efficiency by an individual landlord now passed through several estates of which *landlords are unable to agree together amongst themselves and co-operate*. There are also causes in which estates are now in the hands of numerous co-sharers. *Amongst the co-sharers there may be one or more who are perfectly prepared to undertake the work of repair and to spend money on maintaining irrigation works but they do not see why they should shoulder the whole for they are at present unable to obtain contributions from the co-sharers who refuse to join with them* (Sengupta, 1980, p. 175, emphasis mine).

Despite its initial weakening due to land fragmentation, zamindari leadership of hydraulic projects remained fairly strong until the early 1920s due to the continued prevalence of the produce rent system. In the early 20th century, the local government started to encourage the zamindars and tenants to shift to a fixed rent system in order to increase the security of tenants' rights. Interestingly enough, the transition progressed smoothly because classes with opposite interests accepted new arrangement for different reasons. After a brief period of hesitation, transition to fixed rents gained pace because the tenants "were so badly harassed under the produce-rent system that they were rather eager to accept even very high cash rents." Many of the zamindars also had no objection to "the grant of commutation to tenants at high rates." Hence, it seems that tenants viewed the

continued to function more or less in good condition throughout the nineteenth century because the *zamindars* of South Bihar were a benevolent lot. The explanation that seems far more plausible is that the *zamindars* had pecuniary benefits from taking care of the irrigation works. Indeed, reports confirm that the return on capital investment in irrigation works paid dividends worth 40 to 50 per cent in the first year, in some cases as much as cent per cent, under the produce rent system. No wonder that the same spirit which had motivated the zamindars to exploit the peasants more and more had helped in maintaining the irrigation works. In fact, under these circumstances the *zamindar* enjoying produce rent would be more interested in irrigation works; and indeed even today peasants of Gaya confirm how the *zamindars'* men used to beat and force the peasants had they abstained from the communal work of maintenance" (Sengupta, 1980, pp. 173-174).

rents as an opportunity to reduce their exploitation in the long run. The zamindars, on the other hand, were confident that they would continue to be able to dictate their terms on the tenants. The transition to fixed rent system proved to be a turning point for South Bihar's hydraulic system. Relative developmentalism quickly gave way to unproductive landlordism, which eventually took a heavy toll on the hydraulic infrastructure of the region:

Once the rents were fixed, and the *zamindars* had nothing to lose by the decline in irrigation, they stopped taking care of those works. In addition, in order to increase their income, they sought another course of action by using irrigation works as the lever of control. By intentionally cutting their irrigation supplies they forced many tenants to produce less and abandon their holdings in rent default, which were then settled by the *zamindars* with new tenants at higher rates. Lastly, the zamindars did not refrain even from adoption of such scrupulous methods of increasing their rent-rolls as renting out the silted up *ahar* beds for cultivation. At first they pretended that it was being done for the cultivation of *rabi* crops which are grown in those months of the year when the *ahars* do not contain water. But very soon those stipulations were gone and the same beds came under paddy cultivation, ceasing to be of any use as reservoirs (Sengupta, 1980, pp. 179-180).

Consequently, hydraulic infrastructure started to decline rapidly. By encouraging the transition to fixed rents, the British hoped to protect the tenants, probably with a hope to gradually create an entrepreneurial peasantry similar to the developments in Punjab and other relatively advanced areas. However, this did not happen. As the British became aware of the negative results, they tried to stop the transition in areas with more complex and expensive irrigation infrastructures. Government officials and the courts (which continued to have the legal authority to approve the changes in rental agreements until 1939) rejected many applications on this ground. However, the genie was already out of the bottle and it was very difficult to put it back. Many of the transitions to fixed rents took place without official approval. The Private Irrigation Works Act of 1939 increased the authority of local officials and thereby enabled them to intervene in the construction and maintenance activities. However, under the circumstances of limited state penetration into the

countryside, this empowerment of the local officialdom proved insufficient to reverse the hydraulic decline caused by the loss of local leadership and mobilization, a long-term agrarian decline set in (Sengupta, 1980, pp. 179-183).

Hence, it seems that the state's failure to establish a strong local organization that can mobilize labor and financial sources of the villagers undermined the development of irrigation and agriculture in eastern India as a whole, which comprised a significant portion of the cultivated area and rural population in the pre- and post-1947 period. In his detailed study of the organizational aspects of the hydraulic underdevelopment in contemporary Bangladesh and West Bengal state of India, William Boyce focuses mainly on the post-1947 period and does not provide much detail about the colonial period. His account reveals the existence of organizational problems that are remarkably similar to the ones examined above in the context of Bihar and Orissa. He underscores the weakness of local leadership and the resulting failure of labor and financial mobilization at the local level as one of the leading causes of the hydraulic problem in both areas. Boyce presents them as long-term problems and does not suggest that circumstances were different before 1947 (Boyce, 1987). Bagchi confirms West Bengal's hydraulic decline due to weakening rural mobilization in the post-settlement period (Bagchi, 2010, p. 35).

The underdevelopment of human capital

Another major obstacle to the development of British India's rural economy was the scarcity of human capital. Similar to the prerevolutionary rural China, rural Indians' health, education, and skill levels were dismally low in 1950. This problem was closely related to the colonial government's lack of capacity to penetrate into the countryside and

mobilize the labor and financial sources of the rural population to develop education and health services.

It is possible to analyze India's rural health problem before 1947 focusing on three main causal factors: the underdevelopment of agricultural infrastructure, unhygienic practices, and the lack of medical personnel and facilities. All were closely related to the state's weakness in the countryside. The underdevelopment of agricultural infrastructure appears as a major cause of rural health problems. The expansion of the land frontier in the 19th and 20th centuries brought the previously uncultivated, lower-quality lands into cultivation. Although in places like Punjab land frontier and irrigation expanded together, this was not the case in many other areas. It also reduced the grazing areas and limited the growth of the number of draught animals and the organic fertilizer supplied by them. We also know that the use of chemical fertilizer was negligible in India as a whole and especially in crowded and underdeveloped regions. The lack of irrigation and fertilizer made the improvement of the quality of the newly cultivated areas impossible. The yield from these poor quality lands was not enough to provide adequate nutrition to a growing rural population. Poor nutrition made a significant portion of the rural population easy victims to various diseases (Klein, 1973, pp. 641-642, 658-659; Klein, 1974, p. 194, 210).

As examined before, the state's lack of capacity for rural mobilization caused widespread drainage and flood protection problems. From the second half of the 19th century until 1947 the lack of proper drainage and flood protection facilities impacted rural health adversely in two main respects. First, the resulting waterlogging and siltation problems reduced soil fertility and thereby aggravated the nutrition problem. More importantly, large pools of stagnant water led to the breeding of malarial mosquitos. The

widespread drainage problem made malaria the greatest cause of death in rural India. Malaria accounted for approximately one in every five deaths in the late 19th and early 20th centuries; it took about 20 million lives between the mid-1890s and 1921. Poor drainage also putrefied drinking water in many small towns and villages, leading to the spread of diseases such as dysentery, diarrhea, and cholera, which together accounted for over one-quarter of deaths in the same period (Klein, 1973, pp. 642-643).

Unhygienic social practices and popular resistance against modern medicine comprised another major cause of dismal rural health. Cremation of the deceased had been an old practice in the Indian countryside. However, as fuel became a scarce and therefore expensive commodity due to clearance of forested land under increasing population pressure, poor villagers started to throw the dead bodies in rivers and ponds. Cattle were allowed to bathe in water tanks to the extent that villagers sometimes drained the tanks for the rich manure accumulated inside them. Jains and orthodox Hindus systematically destroyed rattraps that were used for preventing the spread of plague through rats (Klein, 1973, p. 654). Moreover, similar to prerevolutionary rural China, the lack of latrines made open urination and defecation almost universal in rural India (Coffey et al., 2014, p. 43). As part of the degradation of their labor (and very existence as human beings), Dalits have been forced to manually scavenge human waste for centuries, which made them easy prey to diseases (Human Rights Watch, 2014). Although diseases caused by the lack of control over human waste were common in pre-1949 China, the problem was worse in rural India. Finally, as the cases of anti-plague efforts of the early 20th century demonstrated, resistance against vaccination and hospitalization was strong in both the cities and the countryside

due to the state bureaucracy's failure to carry out effective propaganda and gain the trust of the ordinary people (Klein, 1973, p. 654).

Finally, until the 1920s the colonial government did not have a significant number of medical personnel to deal with the huge rural health problem. For instance, in Bengal in 1920, there were less than twenty health officers outside Calcutta and Howrah. In Punjab, there were slightly more than twenty doctors to deal with about half million plague cases every year during the late 19th and early 20th century. In 1919, the Sanitary Commissioner of India admitted that over half century of sanitary work had produced "almost complete failure" (Klein, 1973, p. 657). On the other hand, in parallel to the positive developments in infrastructure construction and the protection of native industry, the colonial administration took steps to extend the reach of the medical services starting in the 1920s (Klein, 1974, p. 216). This improved the situation a bit, but failed to bring a fundamental solution to the health problem.

Table 56 demonstrates the dismal state of health in India. The death rate was extremely high until the 1920s. Improvements in the medical field reduced it to 27.4 (per 1000 people) in 1950-51, which was still an astonishingly high level. In China, the same figure was 20 in 1951 (Zhonghua Renmin Gongheguo Tongji Ju, 1990, p. 90). Life expectancy was 32.1 years in India in 1950-51, while it was 35 years in China in 1949 (China Daily, 2002). Although these statistical figures do not have urban-rural breakdowns, given the similarly high share of rural population in two countries, it can be estimated that these figures were only slightly different in rural areas. In sum, initial conditions of rural health were dismal in both countries but somewhat worse in India.

Table 56 Life Expectancy and Death Rate in the British India, 1871-1921

Period	Life expectancy	Death rate (per 1000 people)
1871-81	24.6	40.7
1881-91	25	40
1891-1901	23.8	42
1901-11	22.9	43.7
1911-21	20.1	49.8
1930	26.8	NA
1940	30	NA
1950-51	32.1	27.4

Source. Acemoglu & Johnson, 2007, p. 17; Government of India, Ministry of Finance, 2012, p. a2; Klein, 1973, p. 640.

Note. Figures for 1871-1921 are taken from Klein, for 1930 and 1940 from Acemoglu & Johnson, and for 1950-51 from Government of India, Ministry of Finance.

Rural education was in a similar shape. The literacy rate was estimated as 5% on the eve of the colonial era (Maddison, 1971, p. 21). We can safely assume that at that time most of the literate people were urbanites at that time. This increased to 18.33% in 1951 for India as a whole, and 12.1% in the countryside (Government of India, Ministry of Finance, 2002). The same figure was below 20% in China as a whole (Gamberg, 1977, p. 41; Gao, 2012) and was probably lower in the countryside. Hence, two countries' levels of rural education were similarly low in the early 1950s.

Moreover, due to the near absence of a modern agricultural extension service, the great majority of the Indian peasantry lacked knowledge about modern farming methods and technologies. Industrial and vocational education was similarly absent, which was a significant obstacle to the improvement of industrial skills. British-dominated industries deliberately kept the share of Indians in managerial posts at a low level (Bagchi, 1972, pp. 100, 150-153; Bagchi, 2010, pp. 259-260). These barriers existed mainly in the urban industries. Nevertheless, since urban industry had played a significant role in the

development of modern rural industry (through various subcontracting and training linkages) in other countries, the racial barriers to the development of a skilled labor and managerial labor force in urban India negatively impacted the development of rural industry.

The Performance of India's Rural Economy on the Eve of Independence

Agriculture

After examining the obstacles to rural India's economic development, we can now turn to its actual performance during the late 19th and first half of the 20th century. We shall start with agriculture, which employed 75% of the country's labor force at the time of independence (Sivasubramonian, 2000, p. 40). I will refer to both upper and lower estimates of agricultural productivity. The lower estimate is provided by George Blyn's book titled *Agricultural Trends in India, 1891-1947*. Since the time of its publication (1966), Blyn's work has remained the most cited work on the subject.¹⁶⁴ Tables 57 and 58 summarize Blyn's estimates for British India and its macro-regions. It shows that between 1891 and 1947, land productivity (crop yield per acre) annually decreased by 0.18% for foodgrains and increased by 0.86% for non-foodgrains. Since foodgrains occupied a very large portion (79.7%) of the cultivated area in 1947-50 (Sivasubramonian, 2000, p. 578), total land productivity did not change during this period. Since the Indian population grew substantially throughout the period (especially after 1920 due to the decrease in the death rate and increase in life expectancy), the stagnation of land productivity led to a decrease

¹⁶⁴ On the strength of Blyn's empirical analysis see Guha, 1992 and Saith, 1992.

in per capita agricultural productivity. While population rose by 0.67% annually, total crop out rose by only 0.37%.

In his book titled *Class Structure and Economic Growth-India and Pakistan since the Moghuls*, which was published in 1971, Angus Maddison provided a higher estimate on India's agricultural performance in the same period. Maddison recognized the empirical strength of Blyn's study and did not propose any revision in his yield estimates. His only criticism of Blyn was that his estimation of the rate of expansion of the cultivated area between 1900 and 1946 (12.2%) was too conservative. He therefore recalculated Blyn's figures by adopting Sivasubramonian's 1965 estimate (23%). Overall, as opposed to Blyn who argued that land productivity was stagnant and labor productivity decreased, Maddison suggested that both remained stagnant in this period. In short, both the upper and lower estimates demonstrate that agricultural productivity did not increase during the last six decades of the colonial period.

Table 57 Average Annual Change (%) in Crop Yield Per Acre in British India and Its Regions, 1891-1941

British India	1891-47	1891-1921	1921-41
All crops	0.01	0.47	-0.02
Foodgrains	-0.18	0.29	-0.44
Non-foodgrains	0.86	0.81	1.15
Bombay-Sind			
All crops	0.28	0.54	0.35
Foodgrains	-0.11	0.43	-0.41
Non-foodgrains	0.92	0.10	2.08
Central Provinces			
All crops	0.08	1.07	-0.91
Foodgrains	0.05	1.12	-0.84
Non-foodgrains	0.77	1.60	-0.02
Greater Bengal			
All crops	-0.34	0.08	-0.48
Foodgrains	-0.55	-0.11	-0.74
Non-foodgrains	0.59	0.74	0.78
Greater Punjab			
All crops	0.62	0.47	0.90

Foodgrains	0.31	0.30	0.47
Non-foodgrains	1.13	0.52	1.70
Madras			
All crops	0.65	1.24	0.19
Foodgrains	0.35	0.99	−0.03
Non-foodgrains	1.25	1.58	0.58
United Provinces			
All crops	0.15	0.38	0.16
Foodgrains	−0.02	0.57	−0.31
Non-foodgrains	0.24	−0.34	0.91

Source. Blyn, 1966, pp. 165-166.

Note. Bombay-Sind comprised the present day Gujarat, the western two-thirds of Maharashtra, northwestern Karnataka, and Pakistan's Sind province. Central Provinces covered parts of the present day Madhya Pradesh, Chhattisgarh, and Maharashtra. Greater Bengal comprised the contemporary Bangladesh and West Bengal, Bihar, and Orissa states of India. Greater Punjab comprised Pakistan's Punjab province and Punjab and Haryana states of India. Madras comprised Tamil Nadu, Malabar region of northern Kerala, coastal parts and Rayalaseema region of Andhra Pradesh, southern Odisha, and Bellary, Dakshina Kannada, and Udupi districts of Karnataka. United Provinces (of Agra and Oudh) comprised the present day Uttar Pradesh and Uttarakhand.

Table 58 Average Annual Growth Rate of Population and Crop Output, 1891-1941

	Crop output	Population
British India	0.37	0.67
Bombay-Sind	0.66	0.71
Central Provinces	0.48	0.58
Greater Bengal	−0.45	0.65
Greater Punjab	1.57	0.93
Madras	0.98	0.80
United Provinces	0.42	0.40

Source. Blyn, 1966, p. 119.

Table 59 Improved Seed Acreage as % of All-Crop Acreage in 1922-23 and 1938-39

	1922-23	1938-39
British India	1.9	11.1
Bombay-Sind	2.8	15.8
Central Provinces	2.0	8.1
Greater Bengal	0.8	6.2
Greater Punjab	5.5	32.9
Madras	1.2	8.5
United Provinces	1.0	5.0

Source. Blyn, 1966, p. 200.

What explains this agrarian underdevelopment? One problem is the development gap between different regions. Rapidly bridging this gap in large, populous, and underdeveloped countries is an overly optimistic expectation given their significant geographical, climatic, and historical variations. On the other hand, expecting long-term and sustained economic development at the aggregate/national level in such countries is also over-optimistic as long as a substantial portion of their less developed regions (where a significant part of their rural populations resides) remains excluded from the development process. Since private capital is weak in these underdeveloped regions, which is a primary cause of their underdevelopment, it is not possible to achieve economic dynamism based solely on private sector performance. This brings the state into the picture as the potentially most capable agent for making large-scale investment in physical and human capital. However, as the experiences of the 19th and 20th centuries show, making such investment is usually very difficult due to the scarcity of the public funds in underdeveloped countries. This requires the state to tax agriculture, which is the largest sector of the economy. In Chapter 1, I have noted that in the few successful cases of (capitalist and non-capitalist) economic development in the Non-Western world, the state not only taxed agriculture effectively but also mobilized rural labor to decrease the costs of the construction of rural infrastructure. This combination appeared as a major factor behind the achievement of long-term and strong rural economic development in countries like China (in the post-1950 era), Japan (starting in the 19th century), Russia (starting in the late 1920s), South Korea and Taiwan (in the 1960s and 1970s).

Our discussion above has suggested that British India was unsuccessful on both accounts. It failed to tax agriculture due to the effective resistance of the landed elites, and

it did not mobilize rural labor for infrastructure construction. Hence, the development of agricultural infrastructure depended entirely on limited public funds. Facing these obstacles, the colonial state chose to concentrate its limited funds on the development of agriculture in a few seemingly more promising regions, which, narrowed the geographical scope of hydraulic development in British India.

Chapter 1 has shown that irrigation has been the precondition of the effective use of land-saving technology such as chemical fertilizer and high-yielding seeds. The use of chemical fertilizer was very negligible in India before 1947. On the other hand, as Table 59 demonstrates, the use of improved seeds increased rapidly in the 1920s and 1930s. However, in parallel to the geographically narrow scope of hydraulic development, the table shows that the use of improved seeds was concentrated in a few relatively well irrigated regions. The only exception seems to be Madras where despite its rapid growth, the use of improved seeds was still below the potential generated by its relatively developed irrigation. Other than this exception, however, the rest of the table confirms the overlap between the regional variation of hydraulic development and the use of improved seeds. We see that although relatively advanced regions used the modern seed technology extensively, other regions failed to do so. Since the latter comprised the great majority of cultivators and cultivated area, their mediocre performance put a strong downward pressure to the improved seed acreage in British India.

Tables 57 and 58 illustrate the consequences of this pattern clearly. Punjab, Madras, and Sind performed decently in terms of both land and labor productivity.¹⁶⁵ However,

¹⁶⁵ As mentioned above, in Bombay-Sind region, the development of irrigation concentrated in Sind, not Bombay. Hence, it is not hard to guess that the above-mentioned advance in the use of improved seeds was also concentrated in the former. For this reason, despite using Blyn's data (that does not separate Bombay

since the areas excluded from the development process had significant weight in total rural population and cultivated land of the country, their agricultural failure was enough to cancel out the achievements of the well-performing regions and keep India's overall agricultural productivity at a low and stagnant level.

Rural industry

India experienced massive deindustrialization during the first half of the colonial era. The conquest of Bengal in 1757 was followed by a rapid decline of industrial employment and production. The subcontinent soon became an open market for the Lancashire textiles, which continuously weakened the subcontinent's previously successful domestic textile industries, which were located mostly in the countryside (Bagchi, 2010, pp. xl-xliii; Habib, 1975, pp. 29-30). This process was gradually reversed in the second half of the colonial period that started in the 1860s. The previous decline of productive investment gradually reversed. The construction of a strong transport network and the development of banking led to an increase in industrial investment by both British and Indian businessmen. However, the lack of protection of the home market, which was dictated by the British economic interests, constrained the country's industrialization significantly. This changed with the start with World War I. The British badly needed the support of the native elite and ordinary people for its war effort, which forced it to concede to the demand of native businessmen for effective protection of the home market. Hence, India's domestic market, which was wide open to imports of cheap products of the British industry for more than 150 years, was effectively protected during the last thirty years of the colonial period. This contributed to industrial growth significantly (Bagchi, 1972, pp.

and Sind) on the tables, I mention Sind, not Bombay, as a relatively advanced region other than Punjab and Madras.

192-196, 207-211). As Table 61 demonstrates, the net value added of secondary sector rose continuously. Moreover, India's per capita industrial output was higher than all Asian countries other than Japan in the early 1950s (Maddison, 1971, pp. 61-62). This seems to be the most important reason for India's higher per capita GDP than China in 1950.

On the other hand, we should not exaggerate the extent of its industrialization. India was still a largely agrarian country at the time of independence. Agriculture and allied activities comprised 54.5% of the GDP and 75% of the labor force. The secondary sector (industry and mining) comprised only 15.9% of the GDP and 10% of the labor force in 1946-50 (Sivasubramonian, 2000, p. 40, 571).

Table 60 The Composition of Industrial Employment and Its Share in Total Labor Force in British India, 1900-1947

	Factories	Small-scale and cottage industries
1900-01	584,000 (0.44%)	13,314,000 (10.15%)
1938-39	2,037,000 (1.46%)	11,907,000 (8.14%)
1946-47	2,844,000 (1.79%)	12,265,000 (7.75%)

Source. Sivasubramonian, 2000, p. 200, 202, 289.

Table 61 Net Value Added by Secondary Sector in British India, 1900-1947 (At 1938-39 Prices)

Year	Mining	Manufacturing	Small-scale and cottage industries	Total
1900-01	89	298	1400	1787
1910-11	136	570	1807	2513
1920-21	155	729	1178	2062
1930-31	173	979	2274	3426
1940-41	258	1779	1677	3714
1946-47	192	2173	1732	4097

Source. Sivasubramonian, 2000, pp. 293-294.

It is important to note that rural industry continued to comprise a significant portion of the industrial sector. In 1946-47, small-scale and cottage industries provided 81.23% of all industrial employment and produced 44.35% of industrial value added (Author's calculations based on Tables 60 and 61). Although detailed data on labor productivity does

not exist for this period, it is estimated that in the handloom industry, which employed 19.2% of the workers in small and cottage industries, output per employee rose from 212 to 573 yards between 1900-01 and 1946-47 (Sivasubramonian, 2000, p. 289). However, as the predominance of farming in rural employment and large extent of unemployment and underemployment in the countryside indicate, rural industry was not developed enough to be able to fully absorb the growing rural labor force. Only 3687 (0.65%) out of 562,450 towns and villages of India had access to electricity in 1950 (Samantha & Sundharam, 1983, p. 19), and modern mechanized industry was extremely weak in the countryside.

Like modernized agriculture, industrial development was confined to a few rural regions. Two main factors determined the regional variation of rural industrialization. The first factor was the size of investable agricultural surplus. In dynamic agricultural regions (such as Punjab and parts of Madras and Gujarat) there was a flow of agricultural surplus to rural industry in the first half of the 20th century. The second factor was the strength of native control of the economy. In contrast to the great majority of India, British industrialists never dominated the industry in western India. Several factors, including the resistance of the Marathas against the British until 1818, the resulting survival of the princely states like Baroda, Gwalior, and Indore, the continued need of the British for native collaborators, and (perhaps) the small size of the export base of Bombay and Gujarat compared to Bengal, were responsible for this outcome. As a result, in this region Indian control of industry, trade, and finance continued without much interruption (Bagchi, 2010, pp. 24-25). This shielded this region from the deindustrialization in the rest of the subcontinent (especially Bengal). When the British policy shifted towards a more developmentalist direction starting in the 1860s, the relatively protected industrial

economy of the region was more ready than many other regions to reap the emerging opportunities.

The native rulers supported the development of rural industry in this region. The development policy of Sayajirao III, who ruled the Baroda state between 1875 and 1940, illustrates this well. He struggled to curtail some of the unproductive practices such as leasing out land. He promoted elementary education and implemented a systematic campaign of state-led industrialization. The Bank of Baroda was founded in 1910 in order to provide rural and urban businesses with low-interest credit. In 1915, a government department of trade and industry was established. Policies such as tax breaks, provision of cheap land, and subsidization of raw materials were implemented. Some towns gained access to electricity in the 1930s. The prince of Rajkot implemented similar policies in Saurashtra. As a result, rural industries of two states gained considerable dynamism in the first half of the 20th century (Bagchi, 1972, p. 210; Streefkerk, 1985, pp. 47-52).

These successful cases point to causes of industrial underdevelopment in the great majority of the Indian countryside. As examined before, there was little investable surplus in the agricultural sector. The territories of native rulers comprised a minority of the subcontinent and although there were “enlightened” native rulers like Sayajirao III, not all native rulers belonged to this category. Finally, less than 1% of the villages had access to electricity (Samanta & Sundaram, 1983, p. 4). Hence, the scope of rural industrialization remained quite narrow in India before 1947.

Conclusion

This appendix has analyzed the main factors behind rural India’s stagnant economic performance before 1947. We have seen that this problem was closely related to its general

characteristics. India experienced a series of productive breakthroughs in farming and rural industry since the ancient times. Its rural economy was not less developed than that of the Western Europe as of the mid-18th century. However, there was no indication that the Indian countryside was on the eve of an economic revolution like that which started in the West a few decades later. In contrast to 18th century Qing China, the economic strategy of the Mughals and other Indian empires of the time focused mainly on (revenue) extraction from the countryside without a comparable emphasis on developing its productive capacity. This appears as a major reason behind the rural unrest that precipitated their decline and then collapse in the face of British aggression. Moreover, although many regional landed elites had the will and capacity to construct and maintain irrigation infrastructure, the great majority of the Indian landlords did not have these qualities. As a result, although the state organized numerous irrigation projects, the ratio of irrigated area in the total cultivated area did not exceed 10% in 1800 while the same figure was close to 30% in China at that time.

As in China, India's agrarian structure was based on unequal land distribution with dispersed cultivation. Big landowners viewed organizing large-scale farming with wage labor riskier and less profitable than renting out land to small and middle peasants. Under the increasing population pressure and competition over land, the scale of farming decreased and land fragmentation increased over time. Both the landed elite and professional moneylenders provided loans to the peasants with usurious interest rates. The combination of central states with an emphasis on extraction, landlord-moneylender strata prioritizing unproductive activities, and small, fragmented, undercapitalized, dry and/or

flood-prone farms was not conducive to dynamic growth. As a result, India's rural economy was stagnant on the eve of the British colonialism.

British rule can be divided into two eras characterized by different economic strategies. The East India Company ruled the subcontinent for a century (between 1757 and 1857). In this era, although the company's activities contributed to Britain's economic development, its approach towards India was not dramatically different from the Mughal and other previous states in that it emphasized revenue collection over developing productive capacity. Hence, agricultural infrastructure did not experience any radical transformation during this period. On the other hand, the company's initial assault on handicraft producers and its success in opening up India to textile imports damaged rural industry in most of India.

Following the suppression of the 1857 Mutiny, the company's rule ended and the British government started to rule the subcontinent directly. A new economic strategy marked this new era. Although the prioritization of the British economic and political interest at the expense of the Indian population did not change, due to the capital glut in Britain, increasing competition from American, German, and Japanese capitalism, and the challenge of achieving long-term political stability in the post-Mutiny era, the British adopted a less extractive and more developmentalist economic strategy. The colonial administration made significant investments to transport and hydraulic infrastructures. Given the declining state capacity in hydraulic works and far more modest development of transport infrastructure in China, a broad convergence between the infrastructural strength of the rural economies of China and India took place between the mid-19th century and the mid-20th century.

This change in the British economic strategy, however, did not bring India's rural economy into a dynamic growth process. Britain's inability to rule the countryside directly by its officials and resulting reliance on the landed elites led British efforts to tax agriculture to fail. The decline of agricultural taxation started in Bengal with the Permanent Settlement of 1793 and spread to the rest of the country after the Mutiny of 1857. Although the exploitation of peasants by landlords via high rents continued, the state's share in this exploitation decreased steadily. Agriculture continued to comprise over half of the Indian economy but its tax contribution declined to a negligible level by the late 19th century.

The decline of agricultural taxation limited the size of the state's hydraulic expenditure. It forced the state to make a choice between spreading the hydraulic funds equally thinly among different regions and concentrating on a few regions. Since the goal was to increase the marketable produce in the short run, the British chose the second. A primary criterion was the prospects for recovering the initial investment through water fees. This seemed possible only in a few areas where a sizeable entrepreneurial peasantry willing to pay for irrigation either existed or could be created rapidly. As a result, the British invested more heavily in Punjab (especially to its "canal colonies" where the state supported the emergence of an entrepreneurial peasantry), the western part of the United Provinces, and Madras. In other words, an effective engagement of the state and the private capital emerged only in a few regions.

Environmental and geographical factors as well as the class dynamics (strong unproductive landlordism and/or the weakness of peasant entrepreneurship) dissuaded the British from concentrating development efforts on large and heavily populated regions of India such as Bengal and Bihar. The exclusion of these regions was usually not

predetermined. As we have seen in the cases of Bihar and Orissa above, the British attempt to share the responsibility of organization and finance of hydraulic works with the rural population faced the resistance of a recalcitrant rural elite. Furthermore, even the regions where the rural elite had been relatively successful in organizing hydraulic works, which comprised the minority of the Indian countryside, increasing land fragmentation and the shift from produce-rent to fixed rent (pushed by the British for developmental purposes), led to the weakening of elite leadership in hydraulic works and precipitated a decline in irrigation. While the dependency on public expenditure (constrained by low agricultural taxation) limited the financial resources that could be spent for irrigation development, the lack of strong state and/or elite leadership to organize the rural population ruled out the possibility of sharing the financial burden of hydraulic works with the rural population. As a result, the scope of irrigation remained limited. The use of chemical fertilizer was also extremely limited. The increasing population pressure on land decreased the total and per capita availability of natural resources that could be used for increasing crop and livestock production. As a result, although land and labor productivity increased in irrigated areas, the non-irrigated were large and crowded enough to cancel out these gains at an all-India level. In sum, agricultural surplus did not increase.

There were other significant constraints on India's rural economic development. Indian villagers remained unhealthy due to poor hygiene and the limited availability of healthcare services in the countryside. Literacy was very low and technical education was almost absent. Hence, the human capital required for dynamic economic development was lacking in rural India. The limited agricultural surplus and low human capital prevented any breakthrough in rural industry.

As in rural China, the solution to these formidable historical problems required a strong state that was capable of making several important transformations. Since both private capital and state funds were insufficient, the rapid development of physical infrastructure required an activist state establishing local institutions that could mobilize India's sizeable surplus rural labor and financial sources of the villagers in order to reduce the infrastructure costs. Since effective agricultural taxation provides the most reliable financial source for economic development in a large and populous agrarian country, the state needed to tax agriculture, which in turn required it to have a strong presence at the village level.

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2009. MA, Sociology, Johns Hopkins University.

2004. MA, Modern Turkish History, The Atatürk Institute for Modern Turkish History, Boğaziçi University. Thesis title: “Political Mobilization in the 1970s Turkey: The Case of the Kahramanmaraş Incidents.”

2002. BA, International Relations, Dokuz Eylül University.

Employment

Fall 2013. Instructor, East Asian Studies Program, Johns Hopkins University (Course title: Rural Development in Asia).

2007-2014. Teaching Assistant, Department of Sociology, Johns Hopkins University.

Spring 2006. Instructor, The Atatürk Institute for Modern Turkish History, Boğaziçi University (Course title: History of the Turkish Republic II).

2004-2005. Research Assistant, The Atatürk Institute for Modern Turkish History, Boğaziçi University.

Selected Publications

“Islamism: A Comparative-Historical Overview,” in Erol Balkan, Neşecan Balkan, and Ahmet Öncü (eds.), *The Neoliberal Landscape and the Rise of Islamic Capital*, Oxford and New York: Berghahn Books, 2014.

“Review of Peasants Under Siege: The Collectivization of Romanian Agriculture, 1949-1962, by. Gail Kligman and Katherine Verdery,” *The Journal of Peasant Studies*, vol. 41, no. 2, 2014, pp. 291-294.

“Changing Relations of Production in Chinese Agriculture from Decollectivization to Capitalism,” *McGill Sociological Review*, no. 4, 2014, pp. 67-92.

(With Weigang Gong and Chengrong Duan) “Regional Variation of Lineage Culture and Fertility Transition in Rural China,” *Rural China*, vol. 10, no. 2, 2013, pp. 258-310.

“Agrarian Change and Labour Supply in Turkey, 1950-1980,” *Journal of Agrarian Change*, vol. 11, no. 2, 2011, pp. 195-219.

Conference and Workshop Papers

“The Role of Labor Mobilization in the Divergence of the Rural Economies of China and India (1950-1980),” Social Sciences Seminars, Koç University, İstanbul, February 20, 2014.

“Landownership and Capitalist Agriculture in China,” Agrarian Development in China: Legacies and Prospects, The Arrighi Center, Johns Hopkins University, Baltimore, November 1, 2013.

“The Role of Labor Mobilization in the Divergence of the Rural Economies of China and India (1947-1992),” Social Sciences Seminars, Koç University, İstanbul, April 21, 2013.

“The Role of Labor Mobilization in the Divergence of the Rural Economies of China and India (1947-1992),” Center for Development Studies, Trivandrum, India, March 22, 2013.

“Changing Relations of Production in Chinese Agriculture from Decollectivization to Agrarian Capitalism,” 21st Annual Columbia Graduate Student Conference on East Asia, Columbia University, New York, February 10-11, 2012.

“Peasant Struggles over Land in Turkey, 1960-1980,” Historical Social Science-Graduate Student Conference, Binghamton University, Binghamton, New York, April 28-29, 2007.

“Land Occupation as a Form of Peasant Resistance in Turkey, 1968-1980,” The Political Economy of the Middle East in the Age of Empire: Historical, Theoretical, and Political Reflections, York University, Toronto, March 23-24, 2006.

Grants and Fellowships

2013 Stephen and Lynn Browne Graduate Student Teaching Fellowship, East Asian Studies Program, Johns Hopkins University.

2012 Department of Sociology, Johns Hopkins University, Summer research grant.

2012 East Asian Studies Program, Johns Hopkins University, Summer research grant.

2012 Program in Global Social Change, Department of Sociology, Johns Hopkins University, Summer research grant.

2009-2010 Chinese Government Scholarship, Wuhan University, Wuhan, China

Awarded scholarship as a full-time language student.

2009 East Asian Studies Program, Johns Hopkins University, Summer research grant.

2009 Institute for Global Studies, Johns Hopkins University, Summer research grant.

2006-2007 The Fox International Fellowship Program, MacMillan Center, Yale University.

Academic Peer Review

Antipode

Journal of Agrarian Change

Languages

Turkish (Native speaker)

English (Fluent)

Mandarin Chinese (Fluent)